

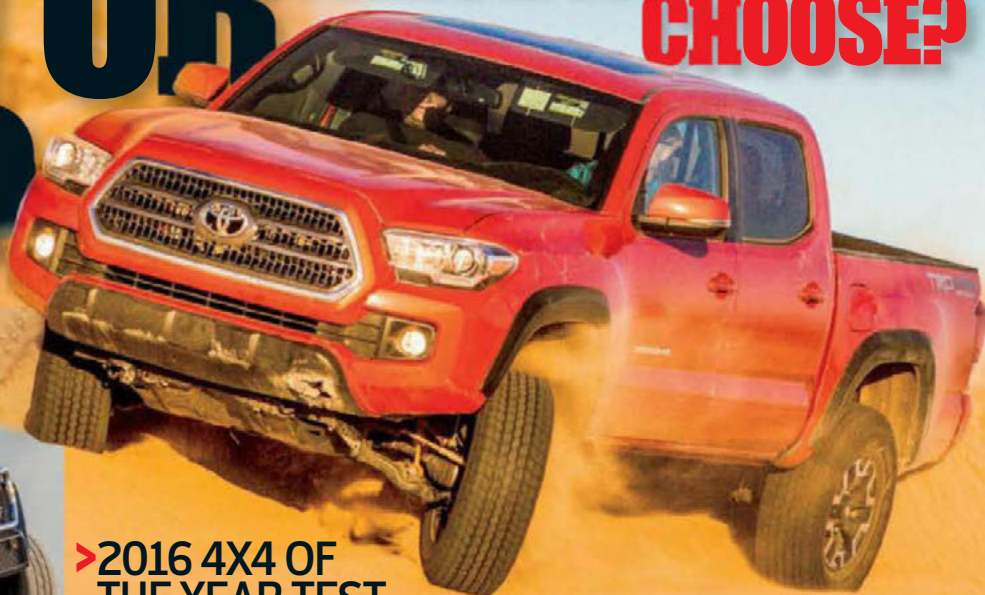
# 7 DAYS WHEELING A DEFENDER 110

## PETERSEN'S **4WHEEL** & OFF-ROAD

**NEW JEEP VS.  
BLACK BEAR**



# NEW OR OLD? WHICH WOULD YOU CHOOSE?



- > 2016 4X4 OF THE YEAR TEST
- > BEST OLD PARTS
- > COYOTE V-8 IN A BRONCO SWAP
- > OLD 4X4S IN THE SNOW



- **LIGHTWEIGHT LINKED SUSPENSION**
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Raising the bar on capability and performance.

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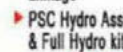


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# 4XFORWARD



## OLD VS. NEW BY 4xFred Williams

**D**O YOU PREFER A NEW 4X4 OR AN OLD ONE? I JUST GOT HOME FROM AN 800-mile road trip in a 44-year-old Jeep Wagoneer. A few months back I did a similar road trip in a brand-new Jeep Renegade Trailhawk, and you know what? I enjoyed every minute of both. The old Jeep had exhaust fumes and barely any safety features but road like a Cadi and gobbled up mountain passes with ease. The new Jeep had heated seats and a smooth clean-running four-cylinder with about as much power as the old Jeep's V-8 but lacked the security of the manually shifted transfer case in the Wagoneer. And this isn't just a comment on Jeeps. During the holidays I spent a week in a stunning new diesel Range Rover. I also spent a week on the road this past year in an early 1990s Land Rover Defender 110, and I really want to own both. (Oddly enough, the older 110 has climbed in value until it is worth almost as much as the new Range Rover!)

But which do you prefer? It's easy to gripe about how new trucks are expensive, have too many computerized parts, and don't hold their value. But it's just as easy to complain that old trucks are plagued with less-than-perfect brakes, finicky fuel systems, cold and wet leaking cabs (or soft tops), and are in constant need of repair. The fact is I'm more than spoiled by the heated seats, GPS, and instant throttle response of a fresh new 4x4, and yet I'm enamored with the rattle of real steel, well-worn seats, and the timeless style of an old 4x4. I can't decide which is better. Some days I want the challenge of getting somewhere in something that could die any second, and other days it's nice to slam the door and just marvel at all the technology in a new vehicle (Though it does seem the Wagoneer door shut more solidly than the new Renegade.)

And that's just new versus old in stock form, what about when you start to modify them? A new 4x4 is expensive to tear into, but it makes for a nice clean slate to build off of, whereas an old 4x4 is plagued with rust and worn parts. Parts that may need to be replaced and may be hard to find a replacement for if damaged off-road. A new 4x4 has computerized nannies, speed sensors, traction control, and so on that get ticked off when we cut and hack or tweak, tune, and hot rod the engines. At the same time, the comfort and performance of a modified and trail-ready new 4x4 is pretty awesome. The old 4x4s, on the other hand, are great because you can ditch all the unreliable stuff and add late-model fuel-injected engines and new drivetrain to end up with a 4x4 that performs like new but with age-old body lines. Sure, carbs and drums are fun to tinker with and make for an adventure if they don't work perfect, but I prefer some of the technology we've developed over the years to make wheeling more fun. But I also love a steel dash, not a plastic-coated one.

I guess that's the answer: The perfect 4x4 would be a mix of new and old. Part classic patina'd body. Part late-model comfort and performance. Part adventure to just keep it running. Part reliable enough never to leave you stranded. I guess there just isn't a perfect 4x4.



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## HOT SHOT

### TTBEAST

**VEHICLE:** 1985 Ford Bronco **OWNER:** Travis Lee, Salinas, CA **TIRES & WHEELS:** 42x14R17 Super Swamper Iroks on 17x9 Weld Sidewinders **SUSPENSION:** Front custom 3-link, 14-inch-travel Fox 2.5 coilovers, stock rear spring, Sky shackle flip with Camburg shackles, 12-inch Bilstein 5100 shocks **DRIVETRAIN:** 351W V-8, C6 transmission, NP208 transfer case, Dana 60 front axle, spool, 35-spline chromoly stub shafts, Mile Marker hubs, 14-bolt rear axle, welded spiders, Ballistic shave kit, disc conversion, 5.38 gears **PERFORMANCE MODS:** Edelbrock cam, Edelbrock AVS carburetor, Edelbrock intake, Flowtech headers, 2½-inch exhaust, Dynomax race muffler **OTHER DOODADS:** PSC full hydro steering, Artec and WFO axle trusses, Artec hi-steer arms, 12k Warn Zeon winch, Odyssey battery, custom rollcage **FUNNIEST WHEELING INCIDENT:** Was wheeling a trail in Hollister Hills and got to a point where three trees had fallen. No way to turn around, had to back all the way down the trail. Not fun, but funny. **DOES EVERYTHING WORK THE WAY YOU WANT?:** I really need fuel-injection for the types of wheeling I'm into **ANYTHING YOU WOULD CHANGE?:** Better seats and harnesses, beadlocks, 4-link the rear



### SLICKROCK BRONCO

**VEHICLE:** 1996 Ford Bronco XL **OWNER:** Phil Reap, Flagstaff, AZ **TIRES & WHEELS:** 35x12.5R15 BFGoodrich KOs on Pro Comp steelies **SUSPENSION:** Deaver coils, custom radius arms, shackle flip, stock leaves, zero-rate add-a-leaves, Bilstein 5100s **DRIVETRAIN:** Stock 302 V-8, swapped-in ZF 5-speed transmission, front and rear Trac-Loks, Dana 50 stub shafts **OTHER DOODADS:** Homebuilt bumpers with front receiver **DOES EVERYTHING WORK THE WAY YOU WANT?:** Mostly. My wife was told this would be my "stock" daily driver. I have to modify a little at a time so she doesn't notice. **ANYTHING YOU WOULD CHANGE?:** Lower gearing **FUNNIEST WHEELING INCIDENT:** Taking my friend who is scared of heights straight up Hell's Revenge first thing in the morning to start our Moab trip. Thought he might need our camping TP!



### SOA SUZI

**VEHICLE:** 1994 Suzuki Sidekick **OWNER:** Michael Bruner, St. Helens, OR **TIRES & WHEELS:** 33x12.5R15 Super Swampers on 15x8 Black Rock Crawlers **SUSPENSION:** 8-inch SOA with Samurai leaves up front, TJ Jeep coils in rear **DRIVETRAIN:** Samurai front axle, 5.13 gears **PERFORMANCE MODS:** 2.0L Vitara motor, CAI **OTHER DOODADS:** Custom bumpers, high-steer, extended trailing arms, diff guards **DOES EVERYTHING WORK THE WAY YOU WANT?:** Yes, flexes out well yet not too much bodyroll with the front leaf spring setup but needs a 4:1 case **FUNNIEST WHEELING INCIDENT:** We all got stuck in our trucks, and we all had a huge mud fight until our reinforcements came to get us out **ANYTHING TO ADD?:** Love taking the family wheeling. The kids love it!



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## ROUGE SAMURAI

**VEHICLE:** 1987 Suzuki Samurai  
**OWNER:** Ryan Goitia, Baton Rouge, LA  
**TIRES & WHEELS:** Toyo MTs on DIY beadlocks  
**SUSPENSION:** Garage-built front 3-link with track bar, Bilstein shocks, QA1 coils, rear wishbone 3-link, 14-inch FOA coilovers  
**DRIVETRAIN:** OE 5-speed transmission, transfer case (6.5:1 gears), Toyota axles, front Lock-Right, rear TRD E-locker, 5.29 gears  
**PERFORMANCE MODS:** 1.6L Tracker engine, Volkswagen KO3 turbo, home-built turbo manifold, Microsquirt engine management  
**OTHER DOODADS:** Frame cut at the firewall and behind the seats, 16-inch stretch in the front, 11-inch in rear for a 107-inch wheelbase, seats back is DOM and tied into the cage, square tube perimeter allows for the soft top to be installed, firewall forward raised 5 inches to gain axle travel and keep it low, Astro van steering  
**DOES EVERYTHING WORK THE WAY YOU WANT?:** For the most part **ANYTHING YOU WOULD CHANGE?:** Coilovers up front, new tires  
**FUNNIEST WHEELING INCIDENT:** First time out I rolled it down a hill at Hot Springs with my fiancée in it. Back half was totaled, hence it all got cut off.  
**ANYTHING TO ADD?:** With the turbo I can attain highway speed, so looking forward to applying for UA! Shout-out to the Hood Poppers crew for the inspiration and my soon-to-be wife for loving this sport.



## BOYD'S DOVETAIL

**VEHICLE:** 1976 Chevy K10  
**OWNER:** Cole Boyd, Cortez, CO  
**TIRES & WHEELS:** 40-inch Nitto Trail Grapplers on 17x9.5 Raceline Monster beadlocks  
**SUSPENSION:** Front King 2 1/2-inch coilovers, Offroad Design 4-link, rear Alcan 4-inch springs with Orbit-Eyes, Offroad Design 4-inch shackle flip, Bilstein 7100s  
**DRIVETRAIN:** TH350 transmission, Offroad Design 203/205 Doubler with triple sticks, Dana 60 front axle, Warn hubs, 35-spline axles, welded differential, ARB cover, 14-bolt rear axle, Yukon mini spool, Artec truss, 4.10s gears  
**PERFORMANCE MODS:** 400ci small-block, headers  
**OTHER DOODADS:** Offroad Design tube doors, Tattons driveshafts, PSC hydro assist, RCI fuel cell, dovetailed bedsides  
**DOES EVERYTHING WORK THE WAY YOU WANT?:** Works great  
**ANYTHING YOU WOULD CHANGE?:** Going lower for more stability, full hydraulic steering setup  
**FUNNIEST WHEELING INCIDENT:** Seeing my girlfriend's face when the truck gets tippy and starts picking up the rear tires



## RED BARN

**VEHICLE:** 1995 Chevy Tahoe 2-Door Barn Door  
**OWNER:** Harry Gage  
**TIRES & WHEELS:** 295/70R17 Mastercraft Courser MXTs on 17x9 XD 807 Strikes  
**SUSPENSION:** RCD 6-inch lift  
**DRIVETRAIN:** Stock  
**PERFORMANCE MODS:** K&N CAI and TB spacer  
**OTHER DOODADS:** Lund visors, Smittybilt Nerf Steps  
**DOES EVERYTHING WORK THE WAY YOU WANT?:** For now, yes  
**ANYTHING YOU WOULD CHANGE?:** Dana 60 front axle with SAS, 14-bolt rear axle, 4.56 or 4.88 gear ratio with 35x12.5 MXTs, new bumpers  
**FUNNIEST WHEELING INCIDENT:** Went to go through what I thought was a shallow puddle. I got halfway when I dropped down almost to the top of the tires. Tried to back out. That was a no-go, so I stuck it back in Second and gunned it. She clawed her way out with no issues, but if it had gotten stuck I would have never heard the end of it.

## SUBMISSION INFORMATION

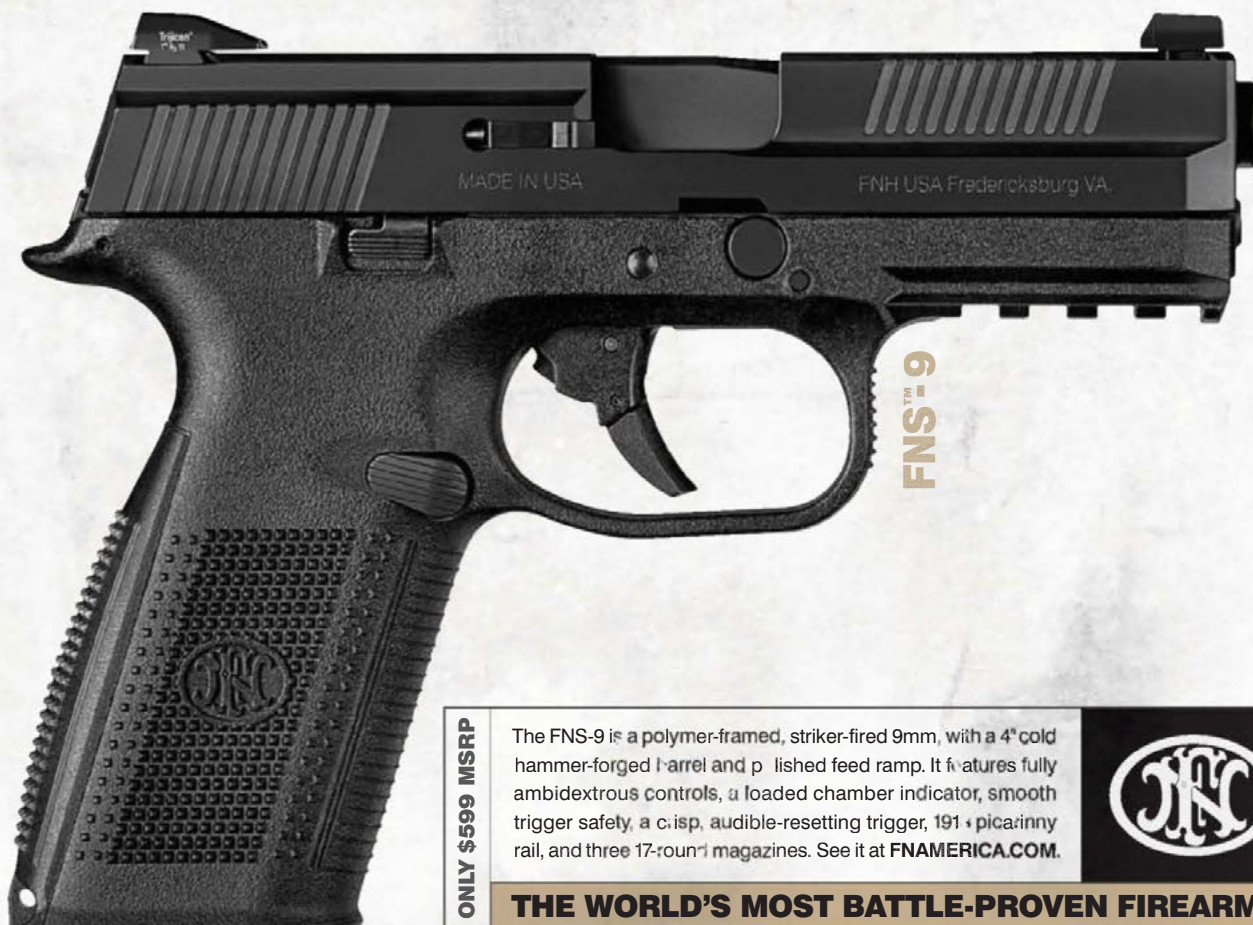
Send us a picture of your ride if you've never done so. We keep a surplus of Readers' Rides submissions, but only one submission per person, and we love all off-road vehicles so send in your entries whether your rig is stock or not. Make sure each digital image is at least 1,600 by 1,200 pixels (or two megapixels) and saved as a TIFF, EPS, or maximum-quality JPEG file. **WRITE TO:** Readers' Rides, 4-Wheel & Off-Road, 831 S. Douglas St., El Segundo, CA 90245  
**EMAIL TO:** readersrides@4wheeloffroad.com

- > **VEHICLE** (year, make, model)
- > **OWNER** (name, city, state)
- > **TIRES & WHEELS** (size, make, model)
- > **SUSPENSION** (lift, springs, shocks)
- > **DRIVETRAIN** (tranny, transfer case, axles)
- > **PERFORMANCE** (engine mods)
- > **OTHER MODS**
- > **DOES IT WORK THE WAY YOU WANT?**
- > **ANYTHING YOU WOULD CHANGE?**
- > **FUNNIEST WHEELING INCIDENT**
- > **ANYTHING TO ADD?**





# GENETICS.



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## TITANIC NEWS

**N**issan has announced that in a few months a gas V-8 will be offered in the new Titan XD fullsize pickup in addition to the 5.0L Cummins turbodiesel currently available in the truck. The new 5.6L Endurance V-8 shares displacement and a name with the previous-generation gas V-8 but little else, says Nissan. The engine

features an aluminum block and heads, dual overhead camshafts actuating four valves per cylinder, direct gas injection, and variable valve timing. Despite an 11.2:1 compression ratio, Nissan says the motor will run on regular unleaded fuel. Output is rated at 390 hp (up from the previous engine's 317) at 5,800 rpm and 401 lb-ft of torque (up from 385) at 4,000 rpm. All Endurance V-8 Titans will be equipped with a new seven-speed automatic transmission.

The gas-powered Titan XD pickups are scheduled to go on sale in the early spring of 2016, says Nissan. More details about the new powertrain will be available closer to launch.

Now that the turbodiesel Titan XD is on sale, we know where Nissan has priced the truck. The base XD, an S-trim 4x2 (all XDs on sale now are crew cabs) starts at \$40,290, while a top-tier Platinum Reserve 4x4 carries a \$60,250 price tag. The model we are most interested in, the Pro-4X 4x4, starts at \$50,970.

Eventually the Titan will be offered in three cab configurations, two chassis (a standard half-ton Titan in addition to the burlier XD), five grade levels and with three powertrain choices, the Cummins turbodiesel, Endurance gas V-8, and a V-6.



## HONDA PREVIEWS NEW RIDGELINE AT BAJA

**S**everal months before an official unveiling, Honda previewed the second-generation Ridgeline pickup by entering a desert-race version in the Baja 1000 and winning the class. In the interest of full disclosure, it was the only vehicle in its class, but still, surviving Baja is a feat unto itself.

This was not a modified version of the stock truck but a tube-frame race vehicle wearing body parts that resemble the new Ridgeline. Power came from a twin-turbocharged version of the 3.5L V-6 that will power the new truck. It was tuned by Honda Performance Development to produce about 550 hp.

The Ridgeline, with Jeff Proctor, Sage Marie, and Jason LaFortune aboard, completed the 821-mile loop in 25 hours 9 minutes.





“A gas V-8 will be offered in the new Titan XD pickup”



## CAMPING BY FORD

Ford Motor Company has become the first OE manufacturer to develop a line of licensed toy haulers, travel trailers, and campers. Ford and partner manufacturer Livin Lite have produced RVs that “incor-

porate unique and inspired Ford design language” into them, says FoMoCo, including an F-Series-inspired front window, F-Series-style wheels, and Blue Oval side graphics. Upholstery inside the vehicles picks up design and stitching cues from Lariat-series trucks.

Initially Livin Lite will produce Ford slide-in campers for 6- and 8-foot beds, and 22- and 24-foot travel trailers and toy haulers. The RVs will be available through Livin Lite dealers. Future plans call for shorter popup trailers and longer fifth-wheels.

## THIS JUST IN

● **JUST LIKE THE ENTERTAINMENT** industry, it is awards season for the new vehicle industry. Our own 4x4 of the Year contest gets extensive coverage in this issue. Meanwhile, *Motor Trend* has named the Duramax turbodiesel-powered Chevy Colorado the 2016 Truck of the Year, and the Green Car Journal gave Ford's F-150 the nod as Green Truck of the Year.

● **RECENT EPA FUEL ECONOMY** ratings have given Chevrolet some more bragging rights. The Colorado pickup, when equipped with the Duramax turbodiesel, is “America's most fuel efficient pickup,” says the maker. Two-wheel-drive models earned 31 mpg highway, 22 city, and 25 combined. Four-by-fours are a bit lower at 29, 20, and 23 mpg.

● **ROBBY GORDON'S TEAM** Speed is fielding two entries in this year's Dakar Rally. He will drive one of the bright orange Gordini race trucks, while a second will be driven by Sheldon Creed, recently crowned the 2015 Stadium Supertrucks champion. Creed, 19, will be the youngest competitor in the Rally's 36-year history. The 2016 Dakar course starts in Buenos Aires, heads west into the Andes Mountains then north to Bolivia before turning south again to return to Argentina.



COURTESY OF TOYO TIRES



## VILDOSOLA WINS HENDERSON 250

Gustavo Vildosola Jr. marked his first race as a member of Team Toyo Off-Road by taking the overall win at the Best in the Desert Henderson 250 in southern Nevada. Driving his Class 1400 (Trick Truck) Ford, he crossed the finish line scant seconds ahead of Second Place finisher Tracy Graf. Vildosola, 33, grew up in Mexicali and was part of the first Mexican team to win the Baja 1000 overall in 2010.



# EARTH WATCH

● **ACCORDING TO SEMA, THE** EPA issued final targets for the amount of ethanol to be blended into gasoline in 2016, while relying on expanded sales of E15 (gas that contains 15 percent ethanol) in order to meet the targets. The EPA is required to set ethanol targets under the Renewable Fuel Standard (RFS). The law was intended to reduce the nation's dependency on foreign oil but has translated into ever-increasing corn production so that the ethanol byproduct can be blended into gasoline. Ethanol, especially in higher concentrations such as E15, can cause metal corrosion and dissolve certain plastics and rubbers in automobiles produced before 2001 that were not constructed with ethanol-resistant materials. SEMA is working to enact legislation to repeal the EPA regulation authorizing E15 sales, cap the amount of ethanol blended into gasoline at 10 percent, and eliminate a mandate that 15 billion gallons of corn-based ethanol be blended into the U.S. fuel supply every year. SEMA has joined with more than 50 other organizations from the auto, boat, food, and energy industries to support passage of the legislation.

● **SHARETRAILS.ORG/** BlueRibbon Coalition recently eliminated the toll-free phone number. The regular phone number, 208.237.1008, remains unchanged and should now be used as the primary way to contact the land use advocacy group.

## EURO EXCESS, PART 1

Looking for an open-air SUV but finding the Wrangler a bit too, um, rough around the edges? The Land Rover Evoque Convertible may be just what you're looking for. The drop-top Evoque loses none of its Land Rover amenities or capabilities, but now you can enjoy all that luxury with the wind in your hair. The fully automated fabric roof retains the Evoque's distinctive profile, and can be raised while the SUV is traveling at speeds of up to 18 mph. Pricing starts at \$50,475.



## EURO EXCESS, PART 2

If Range Rovers just aren't lux or exclusive enough, now there's a Bentley SUV on the market that mixes gobs of thrust with the interior amenities of a stately British manor house. The Bentayga houses a 6.0L W-12 engine under its alloy bonnet (*hood* to you and me) that produces 600 hp and 660 lb-ft of torque and is capable of propelling the 5,300-pound SUV to

60 mph in four seconds. An eight-speed automatic transmission is hooked to a full-time 4WD system with a Torsen center diff, while Bentley's Drive Dynamics Mode and optional Responsive Off-Road Setting offer up to eight modes for a variety of road and surface conditions.

Inside the cabin are 22-way adjustable front seats covered in "only the finest bull hides," says Bentley, "all of which are sourced from cool European climates, naturally tanned, and never overprinted. Customers have the choice of 15 colours, in three duo-tone and one single monotone colour split."

Orders are being taken now, with vehicle deliveries starting in the spring. Pricing starts just shy of \$230,000.

# CALENDAR

● **APR. 2:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Gorman, CA. Info: 310.374.8047, 4x4training.com

● **APR. 3:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Mojave, CA. Info: 310.374.8047, 4x4training.com

● **APR. 8-11:** Death Valley Adventure by Badlands Off-Road Adventures, Ridgecrest, CA. Info: 310.374.8047, 4x4training.com

● **APR. 10-11:** Wisconsin OHV Enthusiast Workshops by the Wisconsin Off-Highway Vehicle Association, Mole Lake Lodge & Conference Center, Mole Lake, WI. Info: wohva.com

● **APR. 14-17:** SCORE Baja Sur 500, La Paz, Baja California Sur, Mexico. Info: 775.852.8907, score-international.com

● **APR. 16-17:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Borrego Springs, CA. Info: 310.374.8047, 4x4training.com

● **APR. 21-23:** Arch Canyon Jeep Jamboree, Blanding, UT. Info: jeepjamboreeusa.com

● **APR. 23:** Winching Clinic by Badlands Off-Road Adventures, Mojave, CA. Info: 310.374.8047, 4x4training.com

● **APR. 23-27:** NORRA Mexican 1000, Ensenada to San Jose Del Cabo, Baja California, Mexico. Info: norra.com

● **APR. 27-30:** Tennessee Mountains Jeep Jamboree, Oak Ridge, TN. Info: jeepjamboreeusa.com

● **NOTE:** If you have a 4WD event you want us to publicize, please send the date, location, a description of the event, and contact info—phone numbers and/or email/website address—to Calendar, 4-Wheel & Off-Road magazine, 831 S. Douglas St., El Segundo, CA 90245; fax 818.566.8501; email 4wheeloffroad@enthusiastnetwork.com. Please submit your info at least four months before the event due to our press lead times. 📧





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ON LAND AND WATER



# 2016 4X4 OF THE YEAR

BY Verne Simons

PHOTOGRAPHY HARRY WAGNER

**A**LL YEAR ROUND THE STAFF HERE AT *PETERSEN'S 4-Wheel & Off-Road* spend their waking hours bringing you the best in hardcore off-road tech and adventure with a healthy side order of dirt, mud, and sand. Once a year we put on our judging hats and become experts in comparing apples to oranges in our annual 4x4 of the Year test. This weeklong test pits new production vehicles against one another in a good old *4WOR* beat-down so we can show you the best new 4x4s available from dealer lots.

Like any good test, ours has a few simple requirements. First, vehicles must have production numbers of at least 2,500. This is to avoid testing one-off ringer vehicles that are aimed at winning our test. Vehicles must have been significantly changed or improved over last year's model. This means eligible vehicles must have undergone a significant redesign, have a new drivetrain option (like a Colorado with a new diesel engine), transmis-



## 4 PICKUPS, 3 SUVs, AND A VAN



RAM REBEL



COLORADO Z71  
CREW CAB TRAIL BOSS



MERCEDES-BENZ SPRINTER 2500 CREW VAN



MERCEDES-BENZ  
G-550



sion, transfer case, or axles), or significant body changes (like new off-road themed bumpers or body protection). Vehicles must have a drivetrain with low-range gearing. Vehicles must be available early in the year. One last requirement that determines whether vehicles will be tested is that the manufacturer provides one to us for the test. That is to say, just because we asked Ford for one of its new 4x4s does not mean that Ford supplied one (Hello, Ford? Hello? Is this thing on?). So if you're mad that we didn't test your new 4x4, talk to the manufacturer, not us.

For the 2016 4x4 of the Year we had a large and diverse group of vehicles: four diesels, four trucks (two midsize and two fullsize), and three SUVs. In the group, three of the four pickups had locking rear differentials, one automatic, and two selectable. Two SUVs had independent suspension all the way around, and one had solid axles front and rear. That same contestant had center, front, and rear locking differentials, and while many judges agree that just because of that it should have won, it is also expensive (really really expensive!) and has sports car tires, making a win less likely. We also had what is possibly the largest contestant in 4x4 of the Year history, a Mercedes 4x4 Sprinter Van. It did well in the test for a big van despite having

what seemed like hundreds of cubic yards (or is it meters?) of sheet-metal and a traction-limiting nonlocking center differential.

All eight test vehicles had automatic transmissions, and no vehicles had any kind of 4x4 or low range shift lever. The end times are near, signaled by the abundance of knobs, buttons, and dials and lack of extra pedals and levers. Sad face. Having said that, at least one transmission (if not two) did a great job of shifting when told to, and some of these vehicles were capable despite the lack of levers or manually controlled clutches. But we still like manually shifted transmissions and transfer cases. Call us cavemen.

Our test pitted against one another the 2016 Colorado Z71 Crew Cab 4WD Trail Boss, 2016 Jeep Renegade Trailhawk 4x4, 2016 Mercedes-Benz G-550, 2016 Mercedes-Benz Sprinter 2500 Crew Van 144-inch 4x4, 2016 Nissan Titan XD Crew Cab, 2016 Ram Rebel 4x4, 2016 Range Rover TD6, and Toyota Tacoma TRD Off-Road. All of the 4x4s finished in one piece still running and driving. All had at least small scratches or dings as a result of the test (we don't play around; or rather, our judging involves lots of playing around). All of the rigs got stuck at one time or another despite a skilled and varied assemblage of judge drivers.



LAND ROVER RANGE ROVER TD6



NISSAN TITAN  
XD CREW CAB



TOYOTA TACOMA  
TRD OFF-ROAD



JEEP RENEGADE  
TRAILHAWK





The M/T Metal Series wheels offer the perfect combination of style and function for truck, SUV, and Jeep enthusiasts.



Deegan 38 wheels and tires by Mickey Thompson were designed in cooperation with racing icon Brian Deegan.

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MM-164M

PRO 2

PRO 4

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**STZ**

on Classic III

**ATZ<sup>P3</sup>**

on SideBiter II

**MTZ<sup>P3</sup>**

on Classic Baja Lock

**CLAW**

on Classic III Black

**50K**  
LIMITED  
TREADWEAR  
WARRANTY



MM-245

MM-366

MM-489



# \$100

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# CHEVROLET COLORADO Z-71

The Chevrolet Colorado made a big splash when it was released in 2015, and Chevy has kept the momentum rolling with the release of the 2.8L Duramax four-cylinder, the first U.S.-market diesel for a midsize truck in years. One of four diesels included in our test, the little Duramax has benefitted from lessons learned in other parts of the world. It is quiet and well refined and provides plenty of torque to get the Colorado moving quickly. The expected turbo lag is very slight off the line, yet the engine winds up quickly and offers great power throughout the rpm range. Though our 0-60 test placed it ahead of only the Sprinter van, the Colorado felt peppy and our judges never used terms like sluggish or slow describing it. This may be due to the six-speed automatic, which was well tuned to keep the engine right in its optimum powerband. The diesel commands a little over a \$4,000 premium versus the V-6 gas engine depending on how the rest of the truck is optioned, making it a no-brainer for diesel fans.

Our Colorado arrived with the Z-71 package as well as a bed-mounted rollbar sporting two LED off-road lights, wheel flares and some low-hanging sidesteps that turned out to be aluminum. We would have left those options boxes unchecked, as it made the truck look overaccessorized. Plus, once we figured out how to turn the lights on, we discovered that the rollbar-mounted lights did nothing more than illuminate the roof of the cab, as they were not mounted high enough to actually improve forward visibility at night. As for the sidesteps, they didn't help ground clearance and proved annoying because most judges had to step over them to get into the vehicle, as opposed to stepping on them. They proved to be stronger than they looked and actually helped protect the low-hanging rockers, but by the end of the week they had quite a few dents and bruises.

The interior is put together well and ergonomic, with everything located where it should be. It is remarkably quiet at speed, and all seating positions are comfortably roomy. With overall build quality, fit, and finish light years ahead of the old S-10 pickups, it's easy to understand



## THE PROS

- Diesel power in a midsize
- Excellent build quality
- Well-rounded off-road

## THE CONS

- Cheesy exterior accessories
- No "off" for traction control
- Low-hanging air dam

why the Colorado has been so well received.

The biggest surprise about the Colorado was how capable it proved to be off the pavement. When viewed next to the Tacoma, the Colorado appeared to sit quite a bit lower thanks in part to the optional sidesteps. But the Colorado proved to have clearance where it mattered. The suspension did an excellent job in high-speed situations and even seemed to have a slight edge over the Tacoma in terms of absorbing the bigger bumps and hits. We were impressed with the front suspension in particular, as it handled the extra weight of the diesel without any harshness or nosediving.

The traction control stayed mostly out of the way in the high-speed sections, though it did step in a time or two when it shouldn't have. In more technical sections we expected the Colorado to be bested by several of the other selectable locker-equipped vehicles in the test, but the G-80 automatic "locker," combined with the traction control system,

made the Colorado very nimble; we just had to be a little more careful about the lines we picked. While good overall, one judge noted that even when turned "off," the traction control system cut engine power twice when trying to coax the truck up a ledge. Both times, the truck had bounced up the ledge only to slide back down because the system felt it knew better. On most modern vehicles the traction control system usually has different levels of "off," but we never found a way to completely disable the system on the Colorado. Still, we never felt like there was a lack of traction available.

By the end of our weeklong test the Colorado had gained several new fans. It has excellent manners on the street and is an absolute blast to drive off-road. It is an extremely well-rounded, capable truck. Add a selectable locker in the back and a way to turn the traction control truly off-off, and the Colorado has all the makings of an off-road hero.

## SPECIFICATIONS

### GENERAL

Manufacturer .....	Chevrolet
Model .....	Colorado Z-71
Base Price .....	\$35,080
Price As Tested .....	\$46,500
Options As Tested .....	\$11,420

### ENGINE

Type .....	I-4 Duramax turbodiesel
Displacement (L/ci) .....	2.8/171
Bore & Stroke (in) .....	3.70 x 3.93
Compression Ratio .....	16.5:1
Fuel Req. (octane)/	
Capacity (gal).....	Diesel or B20/21
SAE Peak	
Horsepower .....	181 @ 3,400 rpm
SAE Peak	
Torque (lb-ft) ....	369 @ 2,000 rpm

### TRANSMISSION

Type .....	6-speed automatic
Model .....	Hydra-Matic 6L50

Ratios... First: 4.06:1; Second: 2.37:1;	
Third: 1.55:1; Fourth: 1.16:1;	
Fifth: 0.85:1; Sixth: 0.67:1;	
Reverse: 3.20:1	

### TRANSFER CASE

Type .....	2-speed active on demand
Model .....	Magna
Low-Range Ratio .....	2.72:1

### AXLES

Front Type .....	IFS open diff with automatic disconnect
Front Diff .....	Dana M190
Hubs .....	Automatic
Rear Type .....	Solid
Rear Diff .....	Dana M220
Ratio .....	3.42:1
Traction Aid .....	G-80 automatic locking differential rear

### SUSPENSION

Front .....	Independent coilover shock; twin-tube shock absorber
-------------	--

Rear .....	Solid axle multileaf springs; twin-tube shocks
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### STEERING

Type .....	Electric power-assisted rack-and-pinion
Lock-to-Lock .....	3.25
Turning Circle (ft) .....	41.3

### WHEELS

Size (in) .....	17x8.0
Material .....	Aluminum

### TIRES

Size .....	P265/65R17
Brand .....	Goodyear Duratrac

### BRAKES

Front .....	ABS; Duralife rotors; hill descent control
Rear .....	ABS; Duralife rotors; hill descent control
60-0 mph as tested (ft) .....	107.3

### ACCELERATION

0-60 mph as tested (sec) .....	12.35
--------------------------------	-------

### WEIGHT (lb)

Curb Weight .....	4,920
Advertised GVWR .....	6,200
Trailer Tow Capacity .....	7,600

### MILEAGE (mpg)

EPA Estimate (city/hwy) .....	25/31
As Tested .....	21.46

### DIMENSIONS (in)

Wheelbase .....	128
Overall Length .....	212
Overall Width .....	84
Overall Height .....	70 1/2
Front/Rear Track .....	62 1/4/62 1/2
Front/Rear Overhang .....	21 1/2/31 1/4
Min. Ground Clearance .....	9



# JEEP RENEGADE TRAILHAWK

Like the Cherokee Trailhawk that was in last year's competition, the Renegade Trailhawk is really a car. It has a transverse-mounted front engine and lacks a real transfer case. Instead, a long driveshaft connects the independent rear axle to the transverse transmission and "low range" is achieved through the controlled application of the transmission's low First gearing in something Jeep refers to as Active Drive Low. Picture a granny-gear transmission as your only low range but as a gear seldom used in daily driving. (Yes, we know this is barely acceptable as qualifying for our test and we are carefully considering whether this type of technology should be rejected in future tests.) The Renegade is in many ways a scaled down version of its bigger brother, and compact vehicles tend to fare better in many off-road situations. Still, the complicated four-wheel-drive system, low-slung undercarriage, and limited wheel travel left many judges skeptical.

The sole gas-powered four-cylinder vehicle of the test, this four-banger was high-revving and "buzzy," many judges noted. But the nine-speed automatic transmission did an excellent job keeping the engine in its powerband to deliver adequate, sometimes surprising acceleration. Once in the dirt, the Renegade was surefooted, stable, and fun, often handling with relative ease the bumps that made us flinch. Only the bigger bumps and rollers had us grabbing the brakes, which were very good at bringing the little SUV to a stop.

When we reached the hillclimb, however, the fun was over. Though the traction control system features terrain-based selectable modes, none of the modes could coax the little Renegade up even a third of the hill despite several different drivers and lines. The front and rear differentials on the Renegade do not have traditional traction-aiding devices like a limited slip or a locker and instead rely upon the brake-based traction control system to transfer power where needed. Unfortunately the hillclimb proved to be too much for the system, and the low ground clearance didn't help matters either. It performed better in the rocks, where we were able to coax the Renegade up



## THE PROS

- 9-speed automatic
- Compact and nimble
- Undercarriage protection

## THE CONS

- Low ground clearance
- Complicated 4WD system
- Fussy traction control

several obstacles that we thought might be too challenging. While it did go up a few technical climbs, it seemed to do so under protest, with the traction control system groaning and flinching the whole way. But it made it up most of what we threw at it in the rocks, which is really the most important thing at the end of the day. By this time in the test, several judges realized that the "mud" or "sand" modes of the traction control system afforded a bit more wheel speed than the "rock" mode and this helped with bumping the Renegade up a few of the obstacles.

The interior and exterior received mixed reviews, though we admit that the Renegade is aimed at a much younger demographic than most of our judges. "Cute" was a common adjective. We appreciated that it had real towhooks front and rear, though we could have done without their being bright red. We found the undercarriage very well protected by skidplates, though the plastic bumpers seemed

vulnerable to trail damage. And while the rockers did come in contact with the ground on more than one occasion, their design hid any damage they might have incurred. The inside is well thought out and ergonomic overall, while the fit and finish are better than average for an entry-level SUV. The inside also hosts a remarkable number of Easter eggs in the form of hidden seven-slot grilles, so many that a couple of judges noted that maybe Jeep was trying a bit too hard to remind people of the Renegade's off-road heritage.

The Renegade was the only entry-level SUV of the test, and from that perspective it offers an impressive number of features and decent off-road capability. While Jeep purists may scoff at its car-based suspension and lack of a real transfer case, the Renegade does pretty well off the pavement and shines on moderate-speed fire roads. While it struggled in the rough stuff, the Renegade isn't a bad choice for a new, entry-level 4x4.

## SPECIFICATIONS

### GENERAL

Manufacturer	Jeep
Model	Renegade Trailhawk
Base Price	\$25,995
Price As Tested	\$29,555
Options As Tested	\$3,560

### ENGINE

Type	I-4 2.4L MultiAir2
Displacement (L/ci)	2.35/144
Bore & Stroke (in)	3.46 x 3.82
Compression Ratio	10.0:1
Fuel Req. (octane)/Capacity (gal)	87/12.7
SAE Peak Horsepower	180 @ 6,400 rpm
SAE Peak Torque (lb-ft)	175 @ 3,900 rpm

### TRANSMISSION

Type	9-speed automatic
Model	948TE

Ratios.. First:	4.71:1; Second: 2.84:1; Third: 1.91:1; Fourth: 1.38:1; Fifth: 1.00:1; Sixth: 0.81:1; Seventh: 0.70:1; Eighth: 0.58:1; Ninth: 0.48:1; Reverse: 3.80:1
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### TRANSFER CASE

Type	Part time using a PTU (Power Transfer Unit)
Model	Jeep Active Drive Low
Low-Range Ratio	4.33:1

### AXLES

Front Type	IFS
Front Diff.	PTU
Hubs	Automatic
Rear Type	IRS
Rear Diff.	RDM
Ratio	2.54:1
Traction Aid	Brake-based electronic traction control (front and rear)

### SUSPENSION

Front	McPherson strut
Rear	Chapman strut cradle, coil springs, stabilizer bar

### STEERING

Type	Electric power-assisted rack-and-pinion
Lock-to-Lock	2.75
Turning Circle (ft)	35.3

### WHEELS

Size (in)	17x6.5
Material	Aluminum

### TIRES

Size	P215/65R17
Brand	Goodyear Wrangler SRA

### BRAKES

Front	Vented rotor with single-piston floating caliper
Rear	Solid rotor with single-piston floating caliper
60-0 mph as tested (ft)	100

### ACCELERATION

0-60 mph as tested (sec)	10.84
--------------------------	-------

### WEIGHT (lb)

Curb Weight	3,600
Advertised GVWR	4,586
Trailer Tow Capacity	2,000

### MILEAGE (mpg)

EPA Estimate (city/hwy)	21/29
As Tested	20.57

### DIMENSIONS (in)

Wheelbase	101
Overall Length	165 3/4
Overall Width	80 1/4
Overall Height	68 1/2
Front/Rear Track	61/60 1/2
Front/Rear Overhang	20 1/4/17 1/4
Min. Ground Clearance	7 1/4



# LAND ROVER RANGE ROVER TD6

Like the G-550, the Range Rover TD6 lands squarely in the luxury SUV category and at first glance is perhaps a little out of place in our test, which places a greater emphasis on utility and off-road performance than on features and amenities. While Land Rover appeals to discerning, well-heeled consumers, the company has not forgotten its off-road roots. Underneath all the gadgets and features that one would expect to find in an \$86,000 SUV, the newest Range Rover does offer good off-highway manners in addition to a comfy, well-appointed highway cruiser.

The biggest news for the TD6 is the all-new 3.0L turbodiesel engine, which received raves across the board from our judges. In addition to being amazingly quiet for a diesel, it drives just like a gas engine. There is no lag off the line like with most turbo engines, and it was quick enough to place third behind the G-550 and Rebel in our acceleration tests. That's impressive for a diesel, even more so when you consider that the TD6 delivered the best mileage of all the vehicles in our test.

The Range Rover also received very high marks from our judges for highway manners and comfort. After a short stint behind the wheel, it was easy to understand why many of our judges would pick the TD6 as their first choice for a long road trip. The heated and cooled leather seats are very comfortable, the stereo sounds great, and there are plenty of cubbies for phones, sunglasses, and other small gear. The center console even has a chilled compartment for beverages. The dash ergonomics are a little complicated but are reasonably intuitive with the exception of the transmission shifter, which several of our judges found infuriating. Simply shifting from Reverse to Drive often required staring at the shifter to see what we hadn't done right, and Park is a separate button rather than simply bumping the shifter all the way forward. Although it's something an owner would get used to, most found the shifter counterintuitive and more complicated than it needed to be.

Off the pavement, the Range Rover received mixed reviews. Like the Renegade,



## THE PROS

- Comfortable interior
- Engine power and mileage
- Sand and snow performance

## THE CONS

- Lack of ground clearance
- Transmission shifter
- Complicated traction control

the Range Rover has a terrain-based traction control system. A knob near the transmission shifter enables the user to select among several settings, such as sand or snow, and the TD6 adjusts ride height, traction control, braking, and several other vehicle functions to suit the terrain. When we attempted our hillclimb early in the test, the Range Rover reached the first loose section at the base and simply refused to go farther; the electronic nannies took over and refused to allow any additional progress. It wasn't until we reached the sand area a couple days later that one of our judges figured out the "secret handshake" to turn most of the interfering systems off.

With the nannies turned off, the TD6 was a blast in the sand thanks to the healthy amount of power on tap and the air suspension that easily soaked up the bumps. Unfortunately the sand is also where we managed to rip off the front air dam, but this turned out to be a bless-

ing in disguise because it revealed the solid front recovery point that came in handy when a judge or two ran out of talent.

The Rover also excelled in high-speed desert terrain, where the well-tuned suspension did a great job swallowing all but the biggest dips and whoops despite the limited amount of travel from the independent front and rear suspension. The lack of ground clearance and wheel travel also hurt the TD6 in the more technical rockcrawling sections, and the plastic bumpers suffered a few rock scratches in the process.

The TD6 seemed most at home on our icy, snowy trail, where it had no problem keeping up with the group. Overall, the Range Rover TD6 offers excellent on-road manners and, on select terrain, delivered confident, surefooted performance off-road. While not the first choice for serious trail work, it is confident and capable in the environments most likely to be encountered by Land Rover buyers.

## SPECIFICATIONS

### GENERAL

Manufacturer	Land Rover
Model	Range Rover TD6
Base Price	\$71,450
Price As Tested	\$86,060
Options As Tested	\$14,610

### ENGINE

Type	60° V-6 Turbodiesel
Displacement (L/ci)	3.0/183
Bore & Stroke (in)	3.31 x 3.54
Compression Ratio	16.0:1
Fuel Req. (octane)/	
Capacity (gal)	Diesel/23.5
SAE Peak	
Horsepower	254 @ 4,000 rpm
SAE Peak	
Torque (lb-ft)	440 @ 1,750 rpm

### TRANSMISSION

Type	8-speed automatic
Model	ZF Model 8HP70

Ratios	First: 4.969:1;
	Second: 3.13:1; Third: 2.104:1;
	Fourth: 1.667:1; Fifth: 1.285:1;
	Sixth: 1.00:1; Seventh: 0.839:1;
	Eighth: 0.667:1; Reverse: 3.167:1

### TRANSFER CASE

Type	2-speed with
	center differential lock
Model	Magna DD295
Low-Range Ratio	2.930:1

### AXLES

Front Type	IFS
Front Diff	Open
Hubs	Automatic
Rear Type	IRS
Rear Diff	Optional locker
Ratio	3.21:1
Traction Aid	Locking differential
(rear) Terrain Response, Dynamic	
Stability Control, Roll Stability	
Control, Electronic Brakeforce	
Distribution, Cornering Brake	
Control Hill Descent Control,	

Emergency Brake Assist, Hill Start	
Assist, Electronic Traction Control,	
Gradient Acceleration Control,	
Gradient Release Control, and	
Reactive Grounding Response	

### SUSPENSION

Front	MSLA with twin lower links
	with air springs/CVD with Passive ARB
Rear	Integral link with air springs/
	CVD with Passive ARB

### STEERING

Type	Electric power-assisted
	rack-and-pinion
Lock-to-Lock	2.75
Turning Circle (ft)	41

### WHEELS

Size (in)	20x8.5
Material	Aluminum

### TIRES

Size	P255/55R20
Brand	Goodyear Eagle F1 SUV 4x4

### BRAKES

Front	Ventilated 13.78-inch
	steel disc
Rear	Ventilated 13.78-inch
	steel disc

60-0 mph as tested (ft)	99.83
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### ACCELERATION

0-60 mph as tested (sec)	9.77
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### WEIGHT (lb)

Curb Weight	5,360
Advised GVWR	6,614
Trailer Tow Capacity	7,716

### MILEAGE (mpg)

EPA Estimate (city/hwy)	22/29
As Tested	23.94

### DIMENSIONS (in)

Wheelbase	114½
Overall Length	189¾
Overall Width	88
Overall Height	72
Front/Rear Track	66½/66
Front/Rear Overhang	17¾/25½
Min. Ground Clearance	8



# MERCEDES-BENZ G-550

We were a little surprised when Mercedes-Benz agreed to hand over one of its priciest, most exclusive vehicles for us to flog on for a week. With an as-tested price north of \$125,000, it seems unlikely that a typical G-550 would get subjected to brush scratches and trail bruises. But although the G-550 might be more at home on the streets of Beverly Hills than in the middle of the desert, it packs some serious hardware to make it a major contender off the pavement.

New for 2016 is the 4.0L twin-turbo V-8, an engine that produces more than enough power to get the G-550 anywhere needed in a hurry. It was the quickest vehicle in our 0-60 test by nearly half a second, and it delivered the best braking performance in our test. Even more impressive, it did both with an as-tested curb weight of 5,900 pounds.

Delivering all that power to the ground is a full-time four-wheel-drive system that sends power to solid front and rear axles filled with locking differentials. You read that right. The G-550 is the only vehicle available brand new in the United States with solid axles stuffed with lockers (other than the Jeep Rubicon). Combine that with a supple coil-spring suspension and you have all the ingredients of a trail hero.

Make no mistake, the G-550 is a blast to drive on the street. The engine has a bit of turbo lag off the line, but once they spool up the power comes on like a freight train. The seven-speed automatic transmission can be controlled via wheel-mounted paddle shifters, which ups the fun factor that much more. In fact, there's so much power on tap that the G-550 quickly commands respect because it has more than enough power to get you into trouble in a hurry.

Straight-line acceleration is one thing, but cornering is another. On twisty mountain roads the G-550 has a surprising amount of body roll. There were a few instances of pucker factor where our judges came into a corner a little hot and the G-550 suddenly felt very top-heavy. Still, this is a drawback we will gladly accept in exchange for solid axles and a simple suspension.

The exterior of the G-550 is all business and reminds us of its 1970s military vehicle roots. Some judges found the exterior dated, while



## THE PROS

- Loads of power
- Front and rear lockers
- Solid front and rear axles

## THE CONS

- Cluttered dash controls
- Lack of rear passenger room
- Lots of body roll

others appreciated the no-nonsense look.

The interior is where the platform most shows its age, as it seems that every inch of the dash and center console area are crammed full of controls and knobs for all of the accessories and options you would expect on a luxury SUV today but which were unimaginable back when the platform was designed. The not-a-touch-screen display on the center of the dash looks like an afterthought, as does the basketball-hoop single cupholder. The overly complicated transmission shifter bothered some judges, though the controls for the transfer case and lockers were pretty intuitive. Even the seats, while comfortable, had us constantly fiddling with the controls to get just right. The rear seating area also seemed cramped to some judges, making us wonder why the vehicle is so popular among urban pop stars.

Off the pavement, however, the G-550 was rock solid. Though the aforementioned body roll hurt performance on high-speed fire

roads somewhat, it had all the equipment to be a trail hero and tackled the hillclimb with ease despite the street-oriented tires. The suspension offered plenty of travel in technical sections, while the lockers made it more or less point-and-shoot. In fact, the suspension performed so well that the lockers were often not needed.

By the end of the week the G-550 had gained a lot of fans amongst our judges, though few of us are in the tax bracket that can afford this luxu-wheeler. The suspension appears to be the easiest to modify of all our testers, and adding some better tires would enhance off-road capability even further. We would be the first in line for a stripped-down (read: much less expensive) version of the G-550, as it is a solid foundation to be a hardcore off-roader and would make great competition for the JK Unlimited.

## SPECIFICATIONS

### GENERAL

Manufacturer .....	Mercedes-Benz
Model .....	G-550
Base Price .....	\$119,900
Price As Tested .....	\$125,075
Options As Tested .....	\$5,175

### ENGINE

Type ...	V-8, liquid cooled, twin turbo
Displacement (L/ci) .....	4.0/ 244
Bore & Stroke (in) .....	3.27 x 3.62
Compression Ratio .....	10.5:1
Fuel Req. (octane)/	
Capacity (gal) .....	91/25.4
SAE Peak	
Horsepower .....	416 @ 5,250 rpm
SAE Peak	
Torque (lb-ft) ....	450 @ 2,250 rpm

### TRANSMISSION

Type .....	7-speed automatic transmission with steering wheel mounted shift paddles
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Model .....	7G-Tronic
Ratios ..	First: 4.38:1; Second: 2.86:1;
	Third: 1.92:1; Fourth: 1.37:1;
	Fifth: 1.00:1; Sixth: 0.82:1;
	Seventh: 0.73:1; Reverse 1: 3.42:1;
	Reverse 2: 2.23:1

### TRANSFER CASE

Type ..	2-speed transfer case, fulltime with locking center differential
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Model .....	Mercedes-Benz
Low-Range Ratio .....	N/A

### AXLES

Front Type .....	Solid
Front Diff. ....	Manual locking
Hubs .....	Automatic
Rear Type .....	Solid
Rear Diff. ....	Manual locking
Ratio .....	4.38:1
Traction Aid ..	Locking differentials (front and rear) and 4-wheel Electronic Traction System (ETS)

### SUSPENSION

Front .....	Rigid Axle with longitudinal and transverse links, coil springs, gas-pressurized shock absorbers, stabilizer bar
Rear .....	Rigid Axle with longitudinal and transverse links, coil springs, gas-pressurized shock absorbers

### STEERING

Type .....	Hydraulic power-assisted recirculating ball box
Lock-to-Lock .....	3.25
Turning Circle (ft) .....	44.6

### WHEELS

Size (in) .....	19x7.5
Material .....	Aluminum

### TIRES

Size .....	P275/55R19
Brand .....	Pirelli Scorpion Zero

### BRAKES

Front .....	Internally vented rotor 12.4-inch discs
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Rear .....	Internally vented 10.7-inch discs
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60-0 mph as tested (ft) .....	95
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### ACCELERATION

0-60 mph as tested (sec) .....	7.92
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### WEIGHT (lb)

Curb Weight .....	5,900
Advertised GVWR .....	7,056
Trailer Tow Capacity .....	7,000
MILEAGE (mpg)	
EPA Estimate (city/hwy) .....	13/14
As Tested .....	12.24

### DIMENSIONS (in)

Wheelbase .....	112
Overall Length .....	188½
Overall Width .....	81½
Overall Height .....	77½
Front/Rear Track .....	59¾/59¾
Front/Rear Overhang .....	17¼/27
Min. Ground Clearance .....	9¼



# MERCEDES-BENZ SPRINTER 2500

Perhaps the most unlikely candidate to ever enter our 4x4 of the Year competition, the Mercedes Sprinter was also the most surprising vehicle in our test. A giant box on wheels, Sprinter vans are meant to do work, whether it's delivering cargo around town or transporting tools and equipment to the job-site. They are not really meant or intended for serious off-road work, but they are now available with four-wheel drive, which is what made the Sprinter eligible for our competition.

From the very first day, the Sprinter was the workhorse of the bunch. Even before the test started we used it to pick up judges from the airport, where we had no problem negotiating heavy traffic. And more than once it hauled all of our gear from one test area to the next with plenty of room to spare. Most of our judges appreciated the no-frills, utilitarian interior of the Sprinter. The cavernous cargo area had some of us dreaming up layouts for a mini-RV or expedition vehicle.

The Sprinter doesn't feel as large as it really is thanks to excellent visibility from the driver seat and plenty of power on tap. The 3.0L diesel and five-speed automatic transmission are well refined, with the transmission receiving particularly high marks from judges. Acceleration was excellent for a vehicle of this size and weight (albeit unloaded), and the transmission did a great job keeping the engine in its optimum powerband. Braking was adequate, but a few judges questioned how well they would fare with a full cargo in the back. Only in typically tight Southern California parking lots did we really feel the Sprinter's bulk. The backup camera was a welcome, often-used feature.

The interior controls were laid out well and easy to use while lacking the bells and whistles of most other vehicles in the competition. Only the transfer case control buttons seemed a little strange, with pictures where text labels would have sufficed. The judges' praise for the transmission extended to its shifter, a stick mounted on the dash within easy reach. We weren't afraid to climb in with muddy feet thanks to the rubberized industrial-type flooring. It's no surprise the Sprinter is such a popular work truck.



## THE PROS

- Excellent visibility
- No-frills interior
- 8-speed automatic

## THE CONS

- No 4-Lo transfer case lock
- Braking a bit sluggish
- Slow speed traction control

Even with all of the high marks on the street, we didn't expect much from the Sprinter off the pavement. After all, it's a cargo van. But we were in for another surprise. While the Sprinter was unable to make it up our hillclimb (no delivery guy who wanted to keep his job would have any business attempting our test hill), it was an absolute hoot in high-speed fire road sections. Several judges noted that they were able to drive the Sprinter way faster than prudent in the high-speed sections.

Speaking of the suspension, out back are typical leaf springs with a solid axle, but up front is a strange combination of IFS with a single fiberglass transverse-mounted leaf spring and struts. It's odd, but it works.

The biggest disappointment was the transfer case, which does not lock the center differential in 4-Lo. Instead, it offers only a 35 percent front and 65 percent rear split, and the low-range ratio is a paltry 1.4:1. In several situations progress was halted due to the

front or rear axle not receiving power. This seriously hampered the Sprinter's low-speed technical trail performance, and on top of that the traction control system often stepped in when it shouldn't have. On one snowy, icy trail it became clear that the system was tuned for slightly higher speeds than we were driving, so carrying a little momentum in some sections (which the supple suspension was able to handle) made all the difference.

The BFGoodrich All-Terrains certainly helped and were among the most aggressive tires on our test vehicles.

While it's no shock that the wheelbase didn't help in the more technical sections, the ground clearance was surprisingly good for a vehicle this size. However, the low-hanging retractable cargo door step was an early casualty and is an option we would decline if we were buying a Sprinter for off-road. Still, we were pleasantly surprised that a utility vehicle this size held its own in our test.

## SPECIFICATIONS

### GENERAL

Manufacturer	Mercedes-Benz
Model	Sprinter 2500 Crew Van
	144-inch
Base Price	\$38,270
Price As Tested	\$57,440
Options As Tested	\$19,170

### ENGINE

Type	V-6 Turbocharged Diesel
Displacement (L/ci)	3.0/183
Bore & Stroke (in)	3.268 x 3.622
Compression Ratio	18.0:1
Fuel Req. (octane)/	
Capacity (gal)	Diesel/24.5
SAE Peak	
Horsepower	188 @ 3,800 rpm
SAE Peak	
Torque (lb-ft)	325 @ 1,400 rpm

### TRANSMISSION

Type	5-speed automatic
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Model	NAG1
Ratios	First: 3.595:1;
	Second: 2.186:1; Third: 1.405:1;
	Fourth: 1.00:1; Fifth: 0.83:1;
	Reverse: 3.167:1

### TRANSFER CASE

Type	2-speed with 65% rear, 35% front
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Model	N/A
Low-Range Ratio	1.40:1

### AXLES

Front Type	IFS
Front Diff	N/A
Hubs	Automatic
Rear Type	Solid
Rear Diff	N/A
Ratio	3.923:1
Traction Aid	Electronically controlled traction system (4ETS) (front and rear)

### SUSPENSION

Front	Transversally mounted monoleaf spring; reinforced shock absorbers; stabilizer bar
Rear	Longitudinally mounted leaf springs; reinforced shock absorbers

### STEERING

Type	Power-assisted rack-and-pinion
Lock-to-Lock	3.375
Turning Circle (ft)	47.6

### WHEELS

Size (in)	16x6.5
Material	Aluminum

### TIRES

Size	P265/75R16
Brand	BFGoodrich KO2 All Terrain

### BRAKES

Front	Disc
Rear	Disc
60-0 mph as tested (ft)	134.7

### ACCELERATION

0-60 mph as tested (sec)	14.43
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### WEIGHT (lb)

Curb Weight	6,040
Advertised GVWR	8,550
Trailer Tow Capacity	5,000

### MILEAGE (mpg)

EPA Estimate (city/hwy)	21/29
As Tested	17.38

### DIMENSIONS (in)

Wheelbase	145 <sup>3</sup> / <sub>4</sub>
Overall Length	239
Overall Width	96 <sup>1</sup> / <sub>2</sub>
Overall Height	100 <sup>1</sup> / <sub>4</sub>
Front/Rear Track	67 <sup>5</sup> / <sub>8</sub> /68 <sup>1</sup> / <sub>4</sub>
Front/Rear Overhang	25/38
Min. Ground Clearance	8 <sup>1</sup> / <sub>2</sub>



# NISSAN TITAN XD CREW CAB

It has been a long time since Nissan last designed the Titan, and there has been a lot of buzz about its new 5.0L Cummins V-8 turbodiesel engine. We were excited about getting our hands on this all-new truck and the all-new engine to see if it truly filled the “whitespace” (Nissan’s term) between ½-ton and ¾-ton trucks.

With a GVWR of 8,990 pounds and a towing capacity of 11,784 pounds, the Titan was capable of hauling the most weight out of all our testers this year. It comes with an as-tested curb weight of 7,240 pounds to match, which beat the Sprinter by over half a ton. And the Titan *feels* every bit as heavy as those numbers. While it was easy for our judges to compare the Titan to the Ram Rebel (exterior dimensions are similar), the Titan is really closer to a ¾-ton than a ½-ton truck. We expected the Titan to be a little heavier due to the diesel engine, but when we put the Titan on a rack we understood where the weight was located. The frame is very beefy, as is the rest of the drivetrain behind the engine. Our tester was also equipped with a clean, built-in fifth-wheel receiver hitch, which is a nice option for the towing crowd. This truck was clearly designed to be a workhorse.

Unfortunately all of that weight hurt acceleration, braking, and mileage. The Titan finished towards the back of the pack in both our 0-60 acceleration and 60-0 braking tests while delivering a disappointing 12.54 mpg, besting only the gas twin-turbo G-550 in fuel economy. It’s almost as if the truck needs different gear ratios in the axles. The numbers reflect our seat-of-the-pants driving impressions, as the Titan was casual about getting up to speed but seemed better about coming to a stop quickly. A few judges would have liked to spend time with the Titan loaded or towing a trailer, as on paper it has all the equipment needed to haul serious payloads.

Nissan did a great job on the interior design and ergonomics. Our judges had little to complain about. We were thankful that it had a “normal” transmission shifter after fighting with several other test vehicles.

The exterior styling is a bold move for Nissan



## THE PROS

- Sturdy and solid
- Best bed storage in the test
- Rear locker

## THE CONS

- Stiff suspension
- Low-hanging undercarriage
- Intrusive traction control

and received mixed reviews from our judges, which is to be expected. The bed storage and tie-down system drew a lot of praise, with adjustable tie-down anchors that attached to rails mounted to the bedsides and the floor and a bed extender that doubled to secure smaller gear. The integrated fifth-wheel hitch was recessed completely in the floor with no obstructions for cargo to get hung up on.

The weight that hampered performance on the street also didn’t do the Titan any favors off-road. Though a stiffer ride was to be expected with the high GVW, at times the Titan felt more like an old solid axle truck than one equipped with IFS and modern struts. High-speed dirt roads became moderate-speed roads, and rough trails featured a lot of head-toss for occupants. There was some wheel hop from the leaf-spring solid rear axle, but not nearly as bad as many other trucks we have driven. The low-hanging front skidplate made contact with the ground quite often, as did the

protruding front towhooks.

The rear locker was a welcome and oft-needed addition, but the traction control system was a conundrum. On our hillclimb it worked well with the rear locker to get the big truck to the top without any drama, but in the sand it immediately cut power and sank like a stone, where the truck stayed stuck for the duration. At one point four judges were bodily pushing the Titan forward in the sand and the computer kept grabbing the brakes, halting progress. Only locking the transmission in First gear seemed to fool the traction control system into allowing enough wheel speed to keep the truck moving. Without the rear locker some of our off-road test sections would have been impassable for the Titan, even areas where the Rebel went with ease despite the lack of a locker.

Overall, we had high hopes for the Titan but had to acknowledge that it fell short of expectations in several key areas.

## SPECIFICATIONS

### GENERAL

Manufacturer..... Nissan  
Model..... Titan XD Crew Cab PRO-4X  
Base Price..... \$50,970  
Price As Tested..... \$58,285  
Options As Tested..... \$7,315

### ENGINE

Type..... Cummins V-8 Turbodiesel  
Displacement (L/ci)..... 5.0/305  
Bore & Stroke (in)..... 3.70 x 3.54  
Compression Ratio..... 16.3:1  
Fuel Req. (octane)/Capacity (gal)..... Diesel/26  
SAE Peak Horsepower..... 310 @ 3,200 rpm  
SAE Peak Torque (lb-ft)..... 555 @ 1,600 rpm

### TRANSMISSION

Type..... 6-speed automatic  
Model..... Aisin A466ND

Ratios..... First: 3.742:1;  
Second: 2.003:1; Third: 1.343:1;  
Fourth: 1.00:1; Fifth: 0.773:1;  
Sixth: 0.634:1; Reverse: 3.539:1

### TRANSFER CASE

Type..... 2-speed, part time  
Model..... Magna TX91A  
Low-Range Ratio..... 2.717:1

### AXLES

Front Type..... IFS  
Front Diff..... AAM 235 mm (9¼) open  
Hubs..... Automatic  
Rear Type..... Solid  
Rear Diff..... AAM 250 mm with  
GKN LDC3-2 manual locking  
differential (PRO-4X)

Ratio..... 3.916:1  
Traction Aid..... Vehicle Dynamic  
Control, Traction Control System,  
Hill Start Assist, Hill Descent  
Control (front and rear)

### SUSPENSION

Front..... Double-wishbone; 36mm  
stabilizer bar; Bilstein Monotube  
coilover shocks  
Rear..... Multileaf; 18mm stabilizer bar

### STEERING

Type..... Hydraulic power-assisted  
recirculating ball  
Lock-to-Lock..... 3.75  
Turning Circle (ft)..... 53.8

### WHEELS

Size (in)..... 18x7.5  
Material..... Aluminum

### TIRES

Size..... P275/65R18  
Brand..... General Grabber APT

### BRAKES

Front..... ABS; Electronic  
Brake-force Distribution;  
14.17-inch vented disc

Rear..... ABS; Electronic  
Brake-force Distribution;  
14.37-inch vented disc  
60-0 mph as tested (ft)..... 109.5

### ACCELERATION

0-60 mph as tested (sec)..... 11.77

### WEIGHT (lb)

Curb Weight..... 7,240  
Advised GVWR..... 8,990  
Trailer Tow Capacity..... 11,784

### MILEAGE (mpg)

EPA Estimate (city/hwy)..... N/A  
As Tested..... 12.54

### DIMENSIONS (in)

Wheelbase..... 151½  
Overall Length..... 245½  
Overall Width..... 98¼  
Overall Height..... 78  
Front/Rear Track..... 69/68½  
Front/Rear Overhang..... 28/32¼  
Min. Ground Clearance..... 8



# RAM REBEL

The Ram Rebel is much more than a Ram 1500 with an appearance package, but the developers are quick to point out that it is not their response to the Ford Raptor. While the Rebel shares a basic suspension design with its more pedestrian counterpart, the Rebel has a lot of tricks intended to tweak the ½-ton Ram for off-road enthusiasts. The bold styling cues give the Rebel a very distinctive look, while the air suspension system makes the Ram quickly adaptable to different types of off-road terrain.

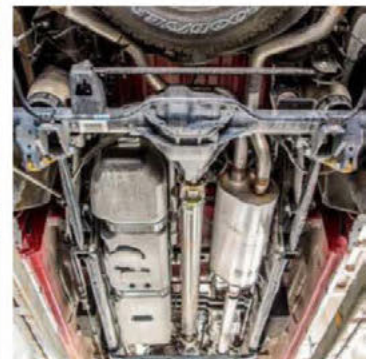
There's no denying that the exterior of the Rebel makes a bold statement. With the unique grille, vented hood, and giant lettering across the tailgate, you won't confuse a Rebel with a regular Ram 1500. While some of our judges didn't mind the restyled nose of the Rebel, most agreed that the huge tailgate lettering would be the first to come off if it were parked in their driveway.

Under the hood is a 5.7L Hemi that now makes 395 hp and 410 lb-ft of torque, which is more than enough to get the Rebel moving with authority. The prodigious amounts of power on tap, combined with the air suspension system that did an excellent job holding corners on twisty mountain roads, made the Rebel genuinely fun to drive on the street.

The interior layout of the Rebel was among the best of the group, with radio, climate, and even ride setting controls right where they are supposed to be. There was, however, one notable exception: the transmission shifter. Instead of a column or console-mounted lever, the Ram now has a rotating knob on the dash to control gear selection. Therefore, shifting is similar to changing a radio station, which takes some getting used to and is a little unsettling.

Our tester was equipped with optional Ram Boxes, which offer convenient lockable storage for items like tools and recovery gear. The bed also included a good cargo management system, though we found the one in the Titan to be a little more versatile.

Though the Rebel is equipped with air suspension, both payload and towing capacity are no different than a regular Ram, though



## THE PROS

- Lots of power
- Interior is well laid out
- Good traction control

## THE CONS

- Transmission shifter knob
- Sloppy suspension at speed
- Obnoxious badging

the suspension is 1 inch taller than regular Dodge 1500 4x4s. The air suspension is ride-height adjustable and even has little tricks like being able to lower the rear suspension to make loading and unloading cargo easier. Different ride settings are driver-selectable, and some settings switch automatically. For example, the Rebel lowers itself above certain speeds for better stability and aerodynamics.

As versatile as the suspension seemed, it did have a few shortcomings. Our judges noted that the suspension tended to get a little sloppy on high-speed desert roads, which is really where it should have stood out as the frontrunner. It seemed particularly susceptible to whoops and had quite a bit of nosedive at times. At slower speeds, however, the supple suspension was a welcome change and did a very good job keeping the tires in contact with irregular terrain.

We expected the Rebel's performance would suffer due to its not having a locking

rear differential, but the limited slip and traction control system made short work of our hillclimb and a few other steep, loose sections of trail. The Rebel was surefooted, stable, and among the best in terms of ground clearance, thanks in part to having the largest tires in the test. When ground clearance came up short—and there was plenty of it with the largest tires (33-inch) in our test—the Rebel's beefy front skidplate took over. The Rebel includes extra skidplating over a standard Ram, but oddly, Ram engineers neglected to add any protection to the gas tank, which seems like a natural thing to do.

Taken as a whole, the Ram Rebel is a solid off-road performer with a pretty cool suspension system that could use additional refinement in a couple of areas. The ½-ton truck market is crowded, but the Rebel offers several features not available anywhere else. But we wouldn't mind seeing it offered with the EcoDiesel under the hood.

## SPECIFICATIONS

### GENERAL

Manufacturer .....	Ram
Model .....	Rebel 1500 Crew Cab
Base Price .....	\$45,100
Price As Tested .....	\$53,175
Options As Tested .....	\$8,075

### ENGINE

Type .....	V-8 Hemi MDS VVT
Displacement (L/ci) .....	5.7/348
Bore & Stroke (in) .....	3.92 x 3.58
Compression Ratio .....	10.5:1
Fuel Req. (octane)/Capacity (gal) .....	87 acceptable, 89 recommended/32
SAE Peak Horsepower .....	395 @ 5600 rpm
SAE Peak Torque (lb-ft) .....	410 @ 3950 rpm

### TRANSMISSION

Type .....	8-speed automatic
Model .....	Torqueflight 8HP70

Ratios ... First: 4.71:1; Second: 3.14:1; Third: 2.10:1; Fourth: 1.67:1; Fifth: 1.29:1; Sixth: 1.00:1; Seventh: 0.84:1; Eighth: 0.67:1; Reverse: 3.29:1
---

### TRANSFER CASE

Type .....	2-speed, part time
Model .....	BW 44-45
Low-Range Ratio .....	2.64:1

### AXLES

Front Type .....	IFS
Front Diff. ....	ZF 215mm
Hubs .....	Automatic
Rear Type .....	Solid
Rear Diff. ....	Chrysler Corporate 235mm (9.25) Optional Limited Slip (Anti-Spin)

Ratio .....	3.92:1
Traction Aid. ....	Brake-based electronic traction control (front and rear)

### SUSPENSION

Front .....	Upper and lower A-arms; air suspension; stabilizer bar
Rear .....	5-link with track-bar; air suspension

### STEERING

Type .....	Electric power-assisted rack-and-pinion
Lock-to-Lock .....	3.25
Turning Circle (ft) .....	39.4

### WHEELS

Size (in) .....	17x8.0
Material .....	Aluminum

### TIRES

Size .....	P285/70R17E
Brand .....	Toyco Open Country A/T

### BRAKES

Front .....	Power Assist ABS with dual-rate 13.2-inch vented disc, 2 piston caliper
Rear .....	Assist ABS with dual-rate 13.8-inch disc

60-0 mph as tested (ft) .....	101
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### ACCELERATION

0-60 mph as tested (sec) .....	8.31
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### WEIGHT (lb)

Curb Weight .....	5,920
Advertised GVWR .....	6,800
Trailer Tow Capacity .....	9,950

### MILEAGE (mpg)

EPA Estimate (city/hwy) .....	15/22
As Tested .....	13.3

### DIMENSIONS (in)

Wheelbase .....	140½
Overall Length .....	229¾
Overall Width .....	97¾
Overall Height .....	77
Front/Rear Track .....	69¼/68¼
Front/Rear Overhang .....	24½/31¼
Min. Ground Clearance .....	9



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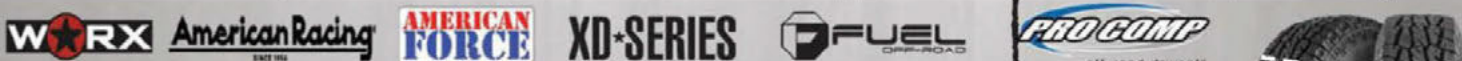
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# TOYOTA TACOMA TRD OFF-ROAD

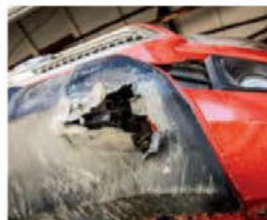
Toyota is no stranger to our 4x4 of the Year competition and has come out on top several times in the past, including last year with the 4Runner. We had high expectations for the all-new Tacoma knowing that the brand takes off-road performance seriously, and we were anxious to try out the new 3.5L V-6 engine. Toyota has long been the leader of the midsize truck market, but recently other makes have entered this turf, so it was important for Toyota to step up its game while not messing up one of its best-selling platforms.

Tacomas have always had adequate, if unremarkable power, so several of our judges were pleasantly surprised when they floored the new Tacoma for the first time. Though it finished in the middle of the pack during our 0-60 acceleration test, the engine had plenty of grunt to get the Tacoma moving at a decent clip.

Our judges were less enthusiastic about the transmission, as several noted that it hunted too much among the six speeds, even on flat ground. We would have loved to try out the available manual transmission instead. Other than the transmission, judges didn't have much to say about on-road driveability. It is good overall, with nothing sticking out as either good or bad.

On the outside, Toyota kept the exterior changes subtle, so much so that a few of our judges were unaware that this was a ground-up redesign. Overall fit and finish is typical for Toyota, which is to say very good.

Inside was equally smart and comfortable, with only a bit of wind noise noted by our testers (which may have been caused by our communications equipment). The interior definitely reflects the redesign, with lots of modern conveniences, such as a stereo capable of keeping up with modern tech. The windshield even has a built-in GoPro camera mount. The location of the rear locker button and Crawl Controls (more on those in a moment) took a little getting used to, just ahead of the sunroof. But the controls themselves were intuitive and easy to use, much like the rest of the interior. Again, standard fare from Toyota in terms of quality and ergonomics, although the cockpit did feel a little tight.



## THE PROS

- Rear locker
- Crawl Control
- Good fit and finish

## THE CONS

- Rear drum brakes
- Weak street-oriented tires
- Below-average skidplates

Once we hit the dirt, it was obvious we had a serious contender on our hands. High-speed desert roads were not a problem thanks to the well-tuned suspension, and the traction control system didn't get in the way like it did in many of our other testers. The hillclimb and rockcrawling sections were effortless thanks in part to the rear locker, and it held its own in the sand. In all of these situations the traction control system was actually more help than a hindrance, which is rare. Related to this is Crawl Control, a feature by which the driver sets the speed and steers the truck towards an obstacle, and the truck figures out how to claw its way up whatever is in front of it. It takes some getting used to and seemed a little gimmicky at first, but Crawl Control does work pretty well. While it's no substitute for an experienced driver (much like the hill descent feature), Crawl Control could aid a novice off-roader. Off-road performance was all the more impressive considering the mild

Goodyear all-terrain tires, one of which suffered a puncture and all of which were heavily chunked by the end of the week. No matter what we threw at it, the Tacoma made it all look easy and was clearly one of the most capable off-road vehicles of our test. And at nearly \$10,000 less than its direct competitor, the diesel Colorado, it was going to be a hard truck to beat in its market.

The only real disappointments came when we had the Tacoma on the rack. Despite the redesign, the Tacoma has only a partially boxed frame, and it was the only vehicle that had rear drum brakes. The skidplates, while adequate, could have been better. The Tacoma was a frontrunner for off-road performance in most judges' eyes, but our competition takes into account far more than off-road capability. For many judges the question remained: Would the Tacoma do well enough in all those other areas to take the top spot, or could another vehicle challenge its off-road prowess?

## SPECIFICATIONS

### GENERAL

Manufacturer ..... Toyota  
Model... TRD Pro Tacoma Double Cab  
Base Price ..... \$33,730  
Price As Tested ..... \$37,610  
Options As Tested..... \$3,880

### ENGINE

Type ..... V-6, Direct Injected,  
Liquid Cooled, Atkinson Cycle  
with Dual VVT-i  
Displacement (L/ci) ..... 3.5/214  
Bore & Stroke (in) ..... 3.70 x 3.27  
Compression Ratio ..... 11.8:1  
Fuel Req. (octane)/  
Capacity (gal) ..... 87/21.1  
SAE Peak  
Horsepower ..... 278 @ 6,000 rpm  
SAE Peak  
Torque (lb-ft) ..... 265 @ 4,600 rpm

### TRANSMISSION

Type ..... 6-speed automatic  
Model ..... ECT automatic  
Ratios... First: 3.60:1; Second: 2.09:1;  
Third: 1.49:1; Fourth: 1.00:1;  
Fifth: 0.69:1; Sixth: 0.58:1;  
Reverse: 3.73:1

### TRANSFER CASE

Type ..... 2-speed, part time  
Model ..... Toyota  
Low-Range Ratio ..... 2.57:1

### AXLES

Front Type ..... IFS  
Front Diff. .... 8-inch, open  
Hubs ..... Automatic  
Rear Type ..... Solid  
Rear Diff. .... 8.75  
Ratio ..... 3.91:1  
Traction Aid ..... Rear manual locker,  
Brake-based electronic traction  
control (front and rear)

### SUSPENSION

Front... Coil spring, double wishbone,  
1.18-inch stabilizer bar  
Rear ..... Leaf-spring  
suspension staggered outboard  
mounted gas-charged shocks

### STEERING

Type ..... Electric power-assisted  
rack-and-pinion  
Lock-to-Lock ..... 3.5  
Turning Circle (ft) ..... 40.6

### WHEELS

Size (in) ..... 16x7  
Material ..... Aluminum

### TIRES

Size ..... P265/70R16  
Brand ..... Goodyear Wrangler SRA  
Adventure All Terrain

### BRAKES

Front ..... 10.75-inch discs, vented  
Rear ..... Drum  
60-0 mph as tested (ft) ..... 101

### ACCELERATION

0-60 mph as tested (sec) ..... 10.13

### WEIGHT (lb)

Curb Weight ..... 4,560  
Advertised GVWR ..... 5,600  
Trailer Tow Capacity ..... 6,400

### MILEAGE (mpg)

EPA Estimate (city/hwy) ..... 18/23  
As Tested ..... 17.28

### DIMENSIONS (in)

Wheelbase ..... 128  
Overall Length ..... 211½  
Overall Width ..... 85½  
Overall Height ..... 71¾  
Front/Rear Track ..... 64/63¾  
Front/Rear Overhang ..... 21/32¼  
Min. Ground Clearance ..... 8½



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# RESULTS



## TEST STRUCTURE

### CATEGORY RANKED HIGHEST

#### RIDE & DRIVE (50% of total points)

Urban/Highway	Range Rover TD6
High-Speed Dirt & Gravel	Toyota Tacoma TRD
Sand	Range Rover TD6
Rockcrawling	Toyota Tacoma TRD
Hillclimbing	Toyota Tacoma TRD

**OVERALL TOYOTA TACOMA TRD**



#### EMPIRICAL (25% of total points)

Torque/Weight Ratio	Range Rover TD6
¼-mile Acceleration	Mercedes-Benz G-550
60-0 Braking	Mercedes-Benz G-550
Load-Carrying Capacity	Mercedes-Benz Sprinter
Fuel Economy	Range Rover TD6
Price As Tested	Jeep Renegade Trailhawk

**OVERALL JEEP RENEGADE TRAILHAWK**



#### MECHANICAL (10% of total points)

Engine's Avail. Power	Mercedes-Benz G-550
Transmission	Mercedes-Benz Sprinter
Transfer Case	Mercedes-Benz G-550
Steering	Chevrolet Colorado
Brakes	Range Rover TD6
Suspension	Toyota Tacoma TRD

**OVERALL CHEVROLET COLORADO  
MERCEDES-BENZ G-550 (TIE)**

#### 4-WHEELING ATTRIBUTES (5% of total points)

Clearance	Toyota Tacoma TRD
Protection	Toyota Tacoma TRD
Recovery	Jeep Renegade Trailhawk

**OVERALL TOYOTA TACOMA TRD**

#### INTERIOR (5% of total points)

Ergonomics	Chevrolet Colorado
Appearance, Fit & Finish	Toyota Tacoma TRD
Perceived Noise Level (NVH)	Range Rover TD6

**OVERALL RANGE ROVER TD6**

#### EXTERIOR (5% of total points)

Body Styling	Mercedes-Benz Sprinter
Cargo	Mercedes-Benz Sprinter
Fit & Finish	Range Rover TD6

**OVERALL MERCEDES-BENZ SPRINTER**

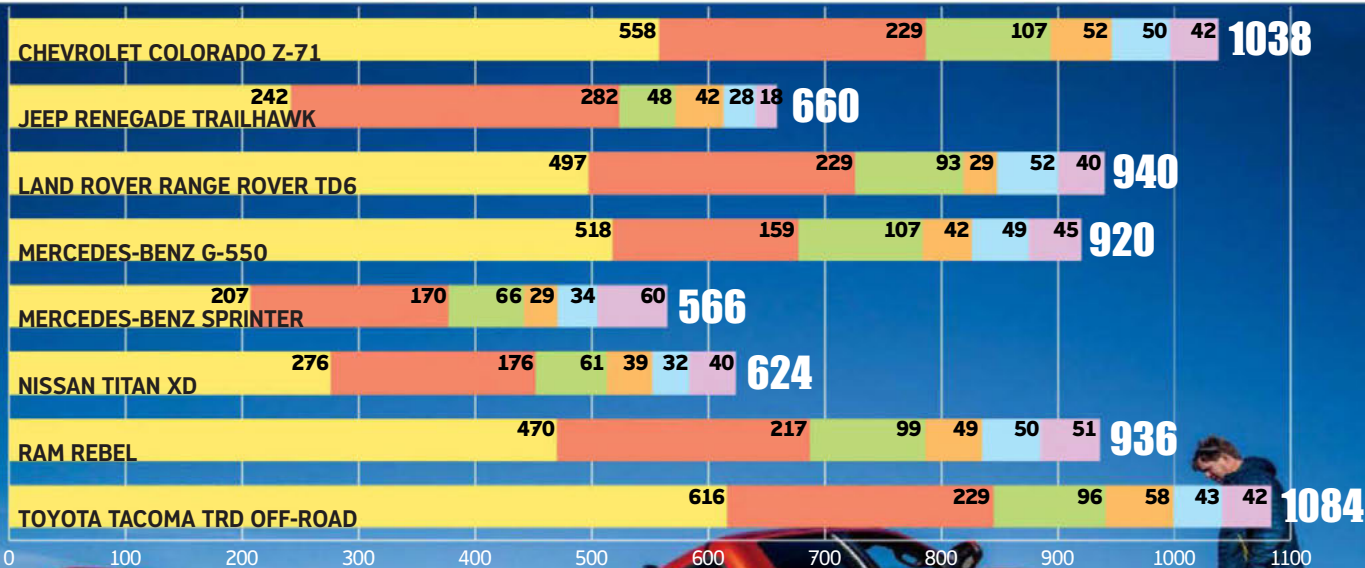




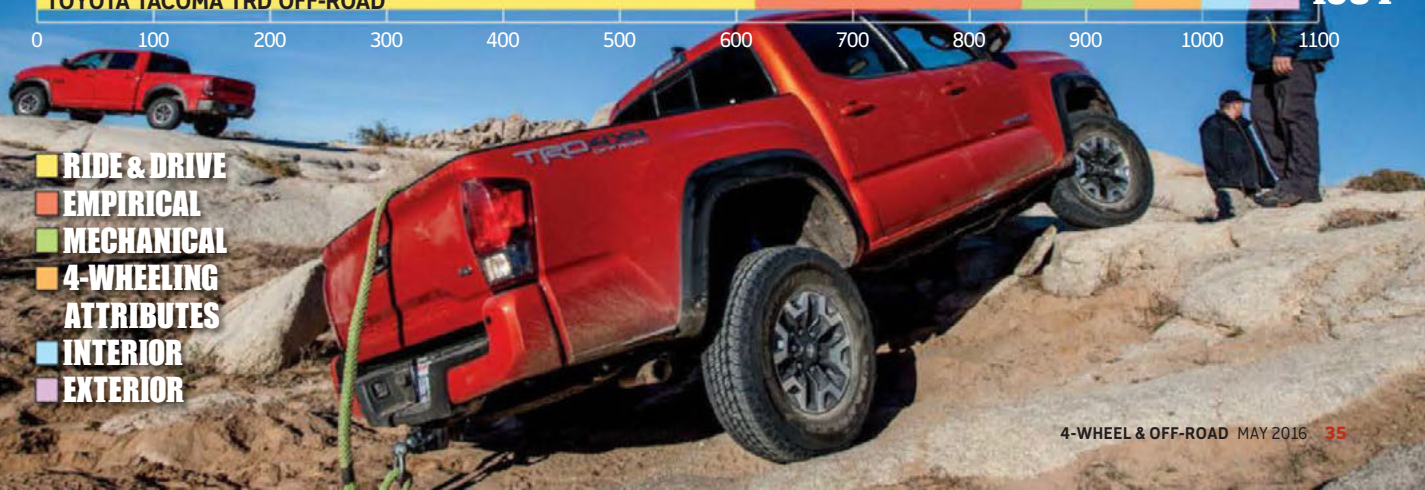


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**2015** Toyota 4Runner TRD Pro  
**2014** Land Rover Range Rover Sport (Supercharged)  
**2013** Jeep Wrangler Moab Edition JK (3.6L V-6)  
**2012** Jeep Wrangler Rubicon JK (3.6L V-6)  
**2011** Land Rover LR4 HSE  
**2010** Ford F-150 SVT Raptor (5.4L V-8)  
**2009** Suzuki Equator Crew Cab RMZ-4  
**2008** Toyota Land Cruiser  
**2007** Jeep Wrangler Rubicon JK (3.8L V-6)  
**2006** Dodge Ram 1500 TRX4  
**2005** Jeep Grand Cherokee (IFS)  
**2004** Volkswagen Touareg V-8  
**2003** Lexus GX 470  
**2002** Jeep Grand Cherokee (4.7 HO V-8)  
**2001** Jeep Grand Cherokee (5-speed automatic)  
**2000** Toyota Tundra  
**1999** Jeep Grand Cherokee (4.7 V-8 Limited)  
**1998** Jeep Grand Cherokee (5.9 V-8 Limited)  
**1997** Jeep Wrangler Sport TJ  
**1996** Jeep Grand Cherokee (w/ center diff lock)  
**1995** Dodge Ram (2500 V-10 longbed Club Cab)  
**1994** Dodge Ram (1500 V-8 shortbed regular cab)  
**1993** Jeep Grand Cherokee  
**1992** Chevrolet Blazer (fullsize)  
**1991** Dodge Dakota  
**1990** Nissan Pathfinder (4-door)  
**1989** Toyota pickup  
**1988** Jeep Cherokee (4.0 engine)  
**1987** Nissan Pathfinder (2-door)  
**1986** Ford Ranger  
**1985** Isuzu Trooper II  
**1984** Jeep Cherokee (2.8 engine)  
**1983** Chevrolet S-10 Blazer



■ RIDE & DRIVE  
 ■ EMPIRICAL  
 ■ MECHANICAL  
 ■ 4-WHEELING  
 ■ ATTRIBUTES  
 ■ INTERIOR  
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11-15 Chevy 2500 2/4WD	6" Knuckle Kit w/ ES Shocks	EXP62206	\$1807.99
2015 Ram 1500 4WD	6" Stage I Kit w/ ES	EXP62206	\$1868.99
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07-16 JK 4-Door	3.5" Lift	EXP62206	\$711.99

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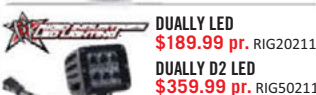


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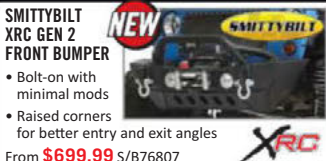
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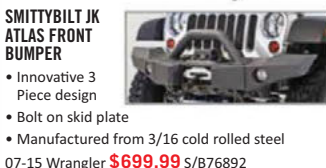
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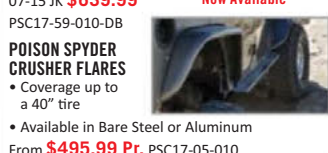
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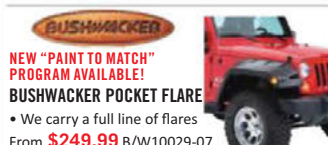
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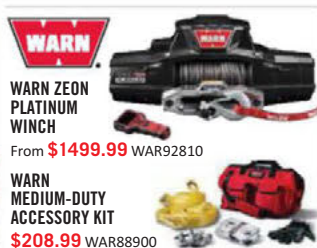
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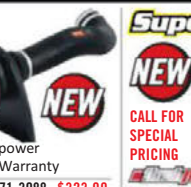
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# WINNER! TOYOTA TACOMA TRD OFF-ROAD

**A**s is usually the case in our annual 4x4 of the Year competition, the 2016 race for first place was a heated one. In the end, just a few points separated the first and second place contenders. The minutia that helped the Toyota Tacoma TRD Off-Road eke out a win over a potent and effective Chevy Colorado Z71 with a 2.8L Duramax Diesel are hard to determine, but what certainly didn't hurt were the Tacoma's cost (relative to competitors), potent and effective manual rear locker, finely tuned suspension, and complex yet very effective electronic Crawl Control. This truck excelled in almost every aspect of our test, proving capable in all of our off-road testing environments, always clawing forward, and only stopping after the bar set by other contenders.

Early on during the test it became obvious to many of the judges that we had a strong contender in our hands in the form of the Toyota Tacoma TRD Off-Road. Toyota takes its past and current popularity with off-road enthusiasts seriously, and the design and effectiveness of the overall product for 2016 shows this. The Tacoma TRD excelled in the hillclimb, when several other contenders were hampered by traction control systems. It also crept and crawled its way up difficult (for a factory stock truck) obstacles in our rockcrawling venue. In the soft sand of our secret test




area the 3.5L V-6 and rear locker kept the Tacoma from being one of the many vehicles that got stuck with as-delivered tire pressure. In the high-speed off-road portion of our test the Tacoma was fun and controlled at speed without intrusive stability controls or other nannies kicking in. Also, the antilock braking system was well matched to off-road use, not freaking out and releasing the brakes when different tires grabbed in the varied terrain.

We also spent time behind the wheel in ice and snow. The Tacoma provided confidence-inspiring traction and braking. With well-rounded performance on the street too, the Tacoma TRD did what many other contenders could not by excelling in almost all of our testing environments, getting judges down the trail, over the obstacle, and from point A to B with confidence.

The 2016 Tacoma TRD Off-Road takes its place amongst the hallowed few, the winners of P4WOR 4x4 of the Year (which includes several other Toyotas, including its direct ancestor, the 4x4 Toyota Pickup from 1989 and last year's TRD Pro 4Runner winner). With a heritage and off-road prowess that harken back to the first solid-axle 4x4 Toyota pickup trucks of the late 1970s and early 1980s, and the ever-popular and easily modified trucks of the late 1980s and 1990s, the 2016 Toyota Tacoma continues to raise the bar of capability and performance, all while maintaining a refined feel for the everyday user.

The 3.5L V-6 moved the midsize truck well on-road and off. Our only major complaints revolve around the transmission, which seemed to hunt for the right gear, and the easily damaged front and rear plastic bumper pieces.

At the end of the day, when all the testing was done and the vehicles were ready for a good wash and some rest, the 2016 Tacoma TRD was ready for more. It has many features that make it the best choice for a dedicated dirthead's next new vehicle purchase. It is capable in stock form and ripe for modification. With some aftermarket suspension lift and tuning, larger tires, durable bumpers, and skidplates, the 2016 Toyota Tacoma TRD Off-Road would make for a good addition to any off-roader's driveway. 

**“The 2016 Toyota Tacoma continues to raise the bar of capability and performance, all while maintaining a refined feel for the everyday user”**







**1** The upright Warn 8274 winch looks right at home on any old iron 4x4. It was first introduced in 1974 to replace the Bellevue winch that was made from 1959 to 1973. The winch is rated at 8,000 pounds and remained mostly unchanged over the course of production. If you have ever wondered what "8274" means, the 8 is for the 8,000-pound rating, the 2 is for two-way in and out, and the 74 is for the year it was introduced. With a fast line speed and classic looks, it pulled itself right into the first position on our list.

# 10 OLD PARTS THAT ARE STILL GREAT

BY Brian Sumner  
PHOTOGRAPHY BRIAN SUMNER

**W**HAT MAKES A PART great? Is it the ability to rebuild it over and over again instead of just throwing it away? Is it the simplicity, where an engineering degree is not required in order to make it operate correctly? What about the ability to customize it with a wide range of aftermarket support? If you said yes to any of the above, we have several old iron components that fit the bill. Some of the parts we chose were used straight from the manufacturer, such as axles and transmissions. Other parts were developed long ago by the aftermarket out of necessity. Either way, they have stood up the test of time and can still be found on trails all around the country to this day.

# THEY DON'T MAKE 'EM LIKE THEY USED TO



**2** The Saginaw 800 series power steering boxes are commonly found in 1970s and '80s GM cars. Look for boxes cast with a "76" near the endcap which will have four mounting bolts, extra webbing in the casting, and larger bearings. The boxes are rebuildable and make a great swap into other old iron 4x4s equipped with manual steering or for replacing a rack on a newer vehicle during a solid axle swap.

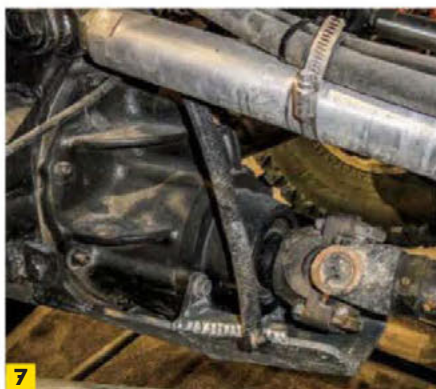
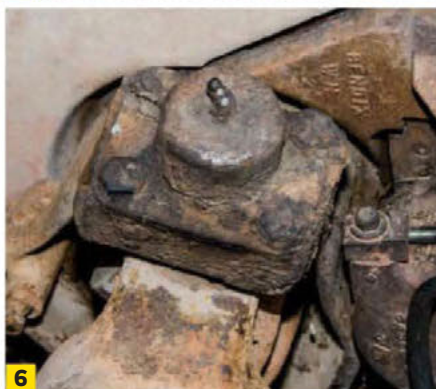


**3** The Dana 300 transfer case first appeared in 1980 Jeeps and International Scouts. This cast iron case is very durable, small, and relatively lightweight. It is easy to upgrade with aftermarket shifters, stronger output shafts, and lower gears. With the exception of the Scout case, the Dana 300 has a round six-bolt mounting flange that can be adapted to many different transmissions.



**4** The vast majority of old iron vehicles were equipped with simple leaf springs. They not only act as the spring but also locate the axles within the chassis, which other types of springs cannot do. This type of suspension can be customized by adding or removing leaves to achieve a specific spring rate and ride quality, and leaves can be re-arched to regain their original height. Leaf springs are very budget-friendly and are such an enduring design that they are still found on the rear of most pickup trucks sold today.





**5** The 1947-1967 SM420 (shown) and 1968-1988 SM465 are heavy-duty GM truck transmissions found in ½-ton through 2-ton applications. These transmissions are nearly indestructible and offer a granny gear of 7.05:1 in the SM420 and 6.55:1 in the SM465. The compact nature of these transmissions makes them a great choice for short-wheelbase vehicles. Both transmissions bolt up to a GM bellhousing and will also work with modified AMC bell-housings. Aftermarket bellhousing and transfer case adapters are from Advance Adapters and Novak Conversions. These old transmissions are rebuildable with new bearings, seals, and gaskets that are still being offered.

**6** Kingpin steering knuckles are mostly obsolete in today's light truck market. They enjoyed a long run on older trucks and were most commonly found on Dana 60 and Toyota axles. The kingpin design is very strong, which is why they were used on 1-ton trucks. Unlike ball joints, which must be replaced when they have worn out, kingpins can be rebuilt with just a few service parts available in kit form.


**7** The Ford 9-inch rear axle is arguably the most popular axle ever made. Ford produced the 9-inch from 1957 to 1986. After the axle's discontinuation, aftermarket companies like Currie

Enterprises started reproducing the third members to go along with a wide variety of axlehousings and upgraded components. As the name implies, it uses a 9-inch ring gear and is a dropout design, meaning the entire third member unbolts from the housing. This makes it convenient to set up the gears on a bench instead of working on the axle while it is still under the vehicle. To keep the vintage vibe, look for a nodular iron housing, marked with a large "N" cast into the housing, instead of an aftermarket third member.

**8** Arthur Warn invented the first manual locking hub in 1948, and since that time manual locking hubs have been offered as OEM or as a conversion on virtually all types of 4x4s. There have been several styles of manual locking hubs, from the two-lever Dualmatic type (shown) to the more traditional dial. We like knowing that our hubs are locked in by engaging them ourselves by hand instead of relying on vacuum lines or the failure-prone mechanism in auto-locking hubs.

**9** The GM Corporate 14-bolt rear axle first appeared in 1973 ¾- and 1-ton trucks and vans. The axle uses an impressive 10½-inch ring gear, a removable pinion support with three pinion bearings, and 1½-inch/30-spline axleshafts. It came in both full- and semifloat models with

the full-floater being the more desirable configuration because it takes the weight bearing off of the axleshafts. The name is derived from the cover using 14 bolts and not from the number of ring gear bolts, of which there are only 12. The strength and abundance of these axles make it one of our top picks.

**10** This legendary transmission makes it onto our list because of durability, popularity, and aftermarket support. The Turbo 400 made its 1964 debut in Buick and Cadillac cars and could soon be found in Jeeps and heavy-duty GM trucks. The three-speed automatic transmission uses a cast aluminum alloy case measuring 24¾ inches long and can be built to withstand as much horsepower as you want to throw at it. When you want to pull the plug on your electronically controlled automatic transmission, the Turbo 400 is a great choice. 

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# CHERRY PICKING

by Harry Wagner

PHOTOGRAPHY HARRY WAGNER

**W**HAT MAKES SOMETHING vintage? Does it have to be old or just look old? This is the question we asked when we saw Christo Slee's 79 Series

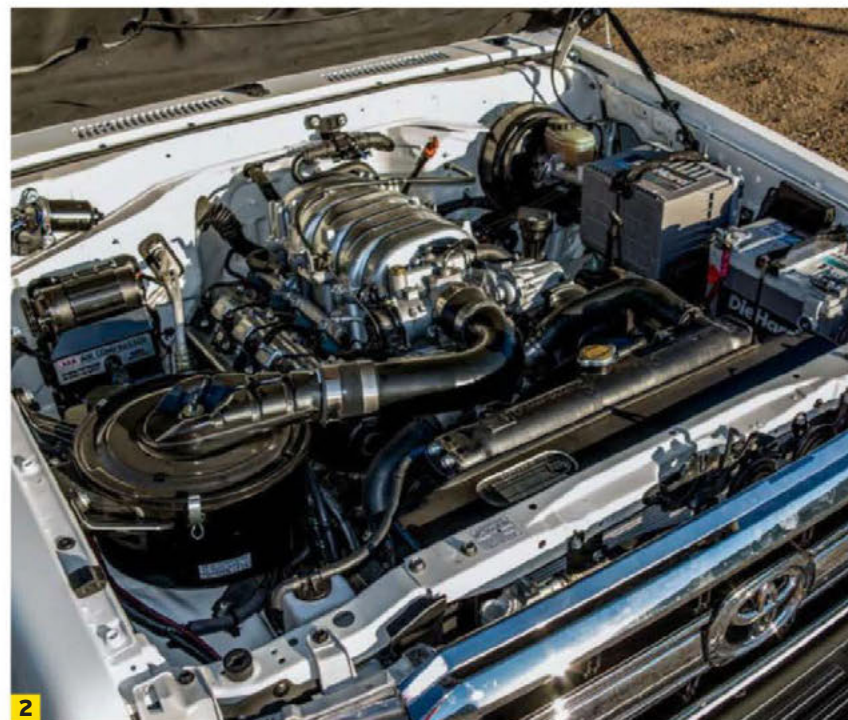
Toyota pickup.

The 70 Series was introduced in 1984, back when Jeep was building CJ-7s and Grand Wagoneers. Those definitely feel vintage compared to a modern JK or Grand Cherokee. The 70 Series was designed as a replacement for the FJ40, and they are still used as a workhorse around the world today by everyone from mining companies to the Taliban.

Slee now runs a successful Toyota off-road shop in Colorado, but he grew up in South Africa, where 70 Series trucks and wagons are as common as biltong and braais. He has made his living modifying 80 Series and 100 Series Land Cruiser wagons that are available stateside, but he still had a soft spot for the old utilitarian 70 Series pickups. So he imported a 79 Series Toyota cab and bed and combined it with an 80 Series chassis and a 100 Series engine to make the ultimate Land Cruiser.

## 70 SERIES NUMBERING

- 70-74: Short-wheelbase, two-door wagon
- 75: Long-wheelbase, two-door wagon
- 76: Four-door wagon
- 78: Troop carrier
- 79: Pickup



2

## THE BEST TOYOTA PARTS COMBINED



1

**1** The pizza cutter look is popular in South Africa, and Christo Slee continued the theme here. The 255/85R16 Toyo Open Country M/Ts are 33 inches tall but only 9.8 inches wide. Mounted on stock Tacoma rims, they provide excellent ground clearance without protruding past the sheetmetal.

**2** The engine bay is so clean you would swear that this is a factory-built vehicle, but in fact nothing in the engine bay is original. An ARB twin air compressor is mounted on the pas-





senger-side firewall, and dual DieHard Platinum batteries flank the engine on the driver side. The master cylinder and brake booster from an 80 Series Land Cruiser bolted right in place. The 4.7L 2UZ V-8 engine is from a 100 Series Land Cruiser. These engines were also used in 4Runners and Tundras, and Christo has retrofitted them into several 80 Series as well. Fitment is relatively easy, but the wiring can be a challenge since there is no commercially available harness similar to what is available for LS engines. This 2UZ makes 230 hp and 300 lb-ft of torque.

## TECH SPECS

### 2010 TOYOTA LAND CRUISER 79 SERIES PICKUP

#### ►DRIVETRAIN

**ENGINE:** 4.7L 2UZ V-8

**TRANSMISSION:** A343F 4-speed automatic

**TRANSFER CASE:** FJ80 offset case

**FRONT AXLE:** Toyota 8-inch with high-pinion third member, 4.56 gears, and ARB Air Locker

**REAR AXLE:** Toyota 9½-inch with full floating hubs, 4.56 gears, and ARB Air Locker

#### ►SUSPENSION

**SPRINGS & SUCH:** Old Man Emu coils, Slee Off Road remote reservoir shocks

**TIRES & WHEELS:** 255/85R16 Toyo Open Country M/Ts on 16x7 factory Tacoma wheels

**STEERING:** Factory 80 Series box with Slee Off Road HD tie rod and OME steering stabilizer

**OTHER STUFF:** 45-gallon fuel tank, dual DieHard Platinum batteries, ARB twin air compressor, custom mandrel-bent stainless exhaust, frame stretched 13 inches, Yaesu ham radio, Kenwood touchscreen stereo



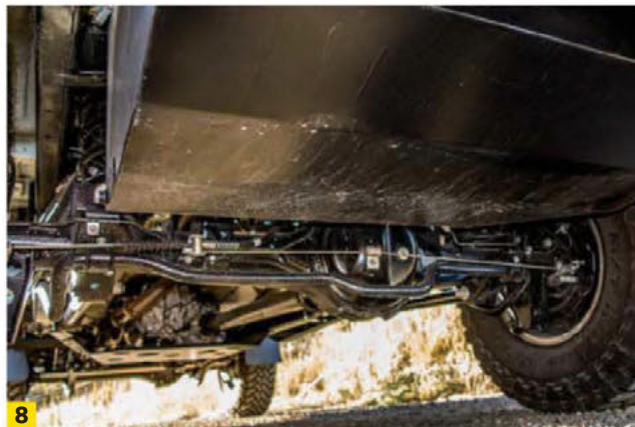
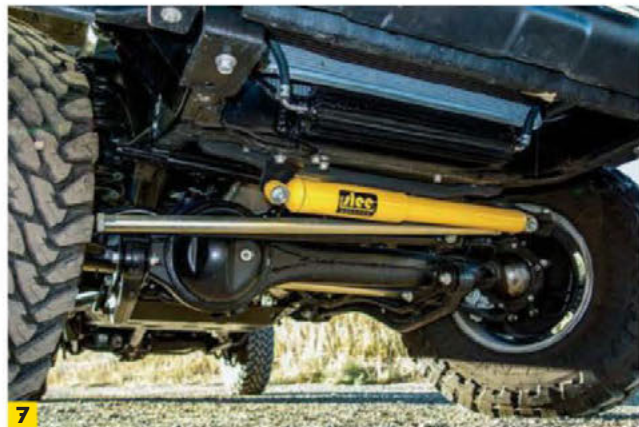
**3** Slee has their own line of shocks that are valved specifically for heavy Land Cruisers. These 2½-inch-diameter shocks bolt right in to the factory mounts and have reservoirs to ensure that they never fade with hard use.

**4** The cab came with no interior, so Christo purchased new interior parts from Toyota. The 70 Series went through several interior revisions in the last 30 years, and this is the most current. Joe Risavi did an excellent job of integrating the shifter from the 100 Series Land Cruiser that donated the transmission and an 80 Series center console.

**5** Both 80 Series and 100 Series Land Cruisers use the 2FHA transfer case. This gear-driven case uses an aluminum housing and an offset rear output, so a corresponding offset rear axle is necessary.

**6** You can see where 13 inches were added to the frame to match the wheelbase of the 80 Series chassis to the 79 Series body. Risavi built custom control arms to match the four-link mounts on the axle to the lengthened frame. Another set of OME coils and Slee remote reservoir shocks are also found out back.

**7** The front axle is an 80 Series unit that came from the factory with a high-pinion center-section and electronically selectable locker. It



was rebuilt and fitted with 4.56 gears and Aisin manual locking hubs. The hubs required a part-time conversion kit for the transfer case.

**8** The rear axle was sourced from the same 80 Series Land Cruiser that donated the chassis and front axle. It is a factory full-floater with disc brakes, so the only addition necessary was 4.56 gears to account for the 33-inch-tall Toyo tires.

**9** A fullsize spare 255/85R16 Toyo Open Country M/T was placed upright in the bed to minimize the space that is taken up and keep the spare where it is easy to reach. A 45-gallon fuel tank sits under the rear of the frame where the stock spare would normally reside. The 79 Series is a far cry from the Tacomas that we have in the States. Instead of a plastic bed, the 79 has a steel bed that maximizes ground clearance and has generous tie-down points everywhere you might need them. 🛠️





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By Joe Gresh

PHOTOGRAPHY JOE GRESH

**I**KIND OF EXPECTED A RUSSIAN military van sporting 44-inch tires powered by a double-expansion steam engine or maybe a portal-axled Winnebago cut in half with a claw foot bathtub in place of the driver's seat. I mean, I was going 4-wheeling in Colorado with Fred Williams, right? The guy can't leave anything alone. So when he picked me up at Flagstaff airport in Jeep's new Fiat-based Renegade

4x4 I felt a sense of doom. No way was this minivan going to survive.

I climbed in the little rig and two small mutts began assaulting me. Fred said, "You like dogs, don't you?" I looked around at our gear stacked to the roof, the dogs, the dog food, the dog water, ice chests, and the insistent, wet tongues. Then I looked at Fred, who was grinning like a lunatic. I began plotting my exit route for the inevitable rollover.

There were actually two Renegade Trail-Hawks, both bright red with a blacked-out section on the hood. The second

Renegade contained Jason and Kenneth, who were shooting video of our trip for an episode of *Dirt Every Day*, Fred's YouTube show. Jason and Kenneth seemed like nice enough guys at first. Later I came to realize that they wouldn't hesitate to kill me if it made four seconds of interesting video. I was expendable, a meat puppet.

The first really solid crunch came when Fred drove the Renegade up an old concrete loading dock by the railroad yard. There was a ramp, but of course that wasn't the line he took. The Renegade scraped and clawed its way over the

**DIRT EVERY DAY'S RENEGADE  
EPISODE FROM THE PASSENGER SEAT**

**4-WHEELING IS  
AWESOME, TONY**





sharp edge of the loading dock leaving long black streaks of Jeep's optional Trail-Rated skidpan in our wake. I said, "I'm not sure this is exactly what Jeep had in mind for this model."

"We're testing Loading Dock mode on the terrain selector knob," said Fred. "This is urban wheeling."

Next we met Fred's wingman, Verne Simons. Verne drives a TJ that resembles the worn bucket from a 1947 Caterpillar loader. Verne rode with us to this weird volcanic spoil zone. The volcano site was an open area where 4-wheelers can run

around without causing too much trouble. The video guys wanted some shots of the Renegade getting airborne through the soft, black cinders.

Verne took off across the place like a maniac; the big rubber tires on his TJ-bucket were oscillating over the bumps so fast they looked like figure-eights. Tiny nuggets of volcanic rock were flying everywhere, and a Park Ranger (or maybe it was Homeland Security) drove up and asked us who that guy is. We honestly didn't know. He certainly wasn't anything like Verne; he was a freaking demon.

After the Homeland Dirt Police left, Fred started doing high-speed ground-to-air launches over huge volcanic moguls. I was sure the floor was going to drop out of our Renegade. There was a loud belt-sander noise when we stuck our landings, and it felt as if our Jeep were buckling in the middle. A dog flew past. Then another. Travel gear was bouncing off the ceiling and water bowls were spilling. It was like being in a clothes dryer except with dogs instead of clothes. Jason and Kenneth got the airborne shots they needed, and after I managed to extract my upper incisors from



**1** Our Renegades came with a cool backup camera incorporated into the dash-mounted GPS. Very handy for checking to see whether you disconnected the dog's leash before driving off.

**2** This is just the first of many scrapes the low-slung Renegade suffered on our trip. Unless you are driving off the end of loading ramps or tackling full-on 4x4 trails, you will probably hit the ground less than we did.

**3** Fred Williams kept insisting that there were only two dogs onboard. I swear at times it seemed like 10 or 12. Thank persistence of memory for the illusion. The dash-mounted dogs were excellent early warning systems: When the trail got tough they ran to the back and hid.

**4** Our camera crew traveled fully loaded with video junk. Progress was slower than a normal trail ride due to setup and takedown times. Still, for sadistic dudes, Jason and Kenneth were fun to travel with.

**5** Backcountry trails were right in the Renegade's wheelhouse. We should have run lower tire pressure, but none of the five experienced off-road team members remembered to bring an air compressor.

**6** All those sharp rocks over the passes would test the Renegades' tires. We bruised one so bad it was a takeoff; another sidewall puncture was plugged and survived the trip.







**“I was expendable, a meat puppet”**

the dashboard we headed north.

The little Renegade ran straight and smooth all the way to Colorado. The thing cruised 80 mph (closed course, professional drivers) all the while sipping gas at the rate of 1 gallon every 30 miles. At night Fred let me drive the Jeep until I woke him due to my screaming at the built-in navigation system. The Jeep's dash GPS tends

to underestimate your next turn, going from “Turn left in 1 mile” to “Turn left now!” in approximately 50 feet.

Black Bear Pass into Telluride, Colorado, is well marked. Signs saying, “High Clearance 4-Wheel-Drive!” followed by those saying, “Short Wheelbase Only!” normally convince minivan drivers to turn back, but Fred plowed the Jeep Renegade over rocks and ledges, rolling boulders the length of the undercarriage as we descended. The Jeep's stiff, street-biased suspension hangs lots of wheels in the air, sometimes three at once, while all manner of electronic traction



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9



10



11

control devices apply brake and transmission corrections for your driving pleasure.

I'm not going to lie: Black Bear was scary. Mostly because the margin for error is slim. Mess up and it's a long way down. If I didn't have a dog on my head I might have gotten out and walked but the Jeep Renegade took it in stride.

I know purists are going to complain. They will say Jeep is losing its tough image, that the Renegade is a glorified Fiat and not a real Jeep. I don't know about that. All I know is the Renegade went everywhere we pointed it. I figure that alone makes it a Jeep. 🐾

**7** We bumped into one of Fred's Ultimate Adventure buddies near Durango. There's definitely a Jeep family resemblance, kind of like Uncle Fester and Morticia Adams.

**8** One would think this message is clear. However, it had no effect on Fred or his dogs. We plunged on, ignoring the fact that the Renegade is not a hardcore 4x4.

**9** Along the way our camera crew fitted GoPro cameras to the Renegade and captured every conceivable angle of the action. I felt the story veered off course whenever the cameras weren't on me. As we descended Black Bear Pass the trail got narrower. A group of cautious Georgians were ahead of us driving big rigs. Toyotas, I think. Even with filming we kept catching up

to them as the little Renegades has no problem with the sharp switchbacks.

**10** Traffic jam on the pass. Sometimes light and agile is better than heavy and cumbersome. The Renegade hardly weighs enough to break things. It is ideal for grocery shopping if your grocery store is at the bottom of a quarry.

**11** The scariest part of the descent into Telluride is the first bit. The road just disappears in front of you. We tried the Renegade's hill descent mode on this section and it worked pretty good except it was very slow. Finally Fred got impatient and drove down working the brakes manually. Want to see if we survived? check out the Renegade episode of *Dirt Every Day* on the Motor Trend Channel on YouTube.



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35X12.50-16LT	6PR	37X12.50-17LT	10PR	35X12.50-20LT	10PR
37X12.50-16LT	6PR	37X13.50-17LT	10PR		



# HORSE TRADING

BY Verne Simons  
PHOTOGRAPHY VERNE SIMONS

**E** ALL IT WHAT YOU WILL—hoarding, junk collecting, a serious 4x4 addiction—we've got it and we've got it bad. Buying a new-to-you used 4x4 is always a fun time for those of us with this affliction. The process must release endorphins in our otherwise scattered brains. The truth is we, the editorial staff of *Petersen's 4-Wheel & Off-Road*, have bought way more used 4x4s and dirt-bound rigs than we have any right to have bought. The downside is we are broke, but happy (although delusional). On the plus side, since we can write (although many argue, just barely) and take pictures (that some say suck) we can share our good and bad experiences with you. With any luck, you will do what we struggle with, and learn from our mistakes the next time you head out the door with cash in hand looking for a new-to-you major project or daily driver/weekend wheeler.

**1** If a vehicle doesn't have a title we usually walk away. Even though a good story to explain the lack of a title might entertain you, you are also going to have to deal with a headache if you buy. That is, unless you are only interested in buying the vehicle for parts. In that case be sure you can get rid of the rest of the vehicle without a title (some salvage yards can't and won't accept vehicles or parts without titles). Some states allow you to jump through enough hoops to get a title with only a bill of sale. We've succeeded at this a few times, but it takes patience, dealing with government bureaucracy, and paperwork, and it doesn't always have a happy ending. If you go the bill of sale route, make sure the vehicle has proper VIN plates and check with your state's Division of Motor Vehicle or your private insurance company to make sure the VIN doesn't come back as stolen before you exchange money.

## TIPS FOR BUYING A NEW-TO-YOU RIG



**1**





**2** Know what you want. If you have an idea of what kind of vehicle you want educate yourself about available options and common problems that these vehicles have. Let's say you want an older Toyota 4Runner or 4x4 pickup. You need to know the difference between a 3.0L V-6 and a 22RE I-4 and which one is right for you. (Here's a hint: It's not the 3.0L V-6.)

**3** Ask the seller if he or she has any extra spare parts. Often people don't want to keep the parts and you might need them in the future (if you don't need them right away). In this case we bought an old Jeep and the seller mentioned having an extra carburetor.

**4** We've been known to use parts we don't like as negotiating points. If the rig you're thinking of buying has ugly aftermarket wheels and the boring stock wheels you prefer are in the garage, ask if the seller would like to keep his or her fancy wheels/tires in exchange for some cash off the top. Fancy wheels you don't like are worthless unless you can sell them. That takes time.

**5** We like to buy vehicles that are close to stock. Vehicles that have already been modified might be fine, and often you can save money if the 4x4 already has what you want, but you should be wondering who did the modifications to any rig and whether they were done correctly.

**6** For many, buying a vehicle with a salvage title is a huge no-no. Vehicles can be salvaged for a number of reasons that may not be that bad, but as a rule insurance companies are not in the business of losing money, so you should be suspicious if they don't think it's worth fixing. A project like this JK Unlimited is not an impossible task to undertake, but all the little parts that are missing or damaged are going to add up quickly if you want to return it to stock. Also, the title will always have a stigma attached to it, which can affect future sales. At the same time, if you are building a race car or beater trail rig, who cares if it's got a few dents, is missing the dash, or won't fetch a premium price?

**7** Like it or not, buying an old Jeep, an Early Bronco, or a Toyota FJ-40 means you are treading where others have gone before. Finding a specialty restorer or specialty online retailer means that you can get the parts that are available as new replacements or maybe from their salvage yard out back. Specialty restorers for all cool old 4x4s are all over the country. Close to us is Driven Auto Parts, an Early Bronco (and fullsize Bronco) specialty place. Driven Auto Parts keeps a few restorable Early Broncos on hand for people who want to start a project. These guys know what they have and what they are worth, so don't bother haggling much. But hey, you already know where to get parts, and rest assured that they will want to keep you as a customer.

**8** Hanging out at a place like Driven Auto Parts also helps you absorb information about what problems are common, how to fix them, and where to look at a new (to you) project to learn whether it's worth buying. Like, does that Early Bronco have a Dana 44 front axle or a Dana 30? People who have done this before know, and chances are they are going to be willing to help you with your project.

**9** There are several late-model 4x4s with special off-road packages installed right from the factory. Finding one at a used car lot may be a great score if you're planning on making the 4x4 a wheeler. Z71, FX4, TRD, and Pro-4X are names for special off-road packages that garner you deeper gearing, a locking (or limited slip) differential, larger tires, tuned suspension, and sometimes a beefier drivetrain or skidplates. Be forewarned: Stickers can be added to base vehicles that lack these desirable features, so you might not get what you think you are getting. Also, there are two-wheel-drive TRD "Prerunner" Tacomas and two-wheel-drive Jeep Wranglers that lack front drive components and a transfer case. This sticker was stuck on a fake Nismo Frontier 4x4 without a rear locker and rear Dana axle. Be wary. 🚫

## SOURCE

**DRIVEN AUTO PARTS**  
888.269.3969  
drivenautoparts.com





1



2

# RAM RIMS

## AEV'S 8-LUG WHEELS FOR TRUCKS THAT WHEEL

By Fred Williams

PHOTOGRAPHY AEV AND FRED WILLIAMS

**W**HO WANTS BLING when they're hub-deep in mud or snow? Yeah, you might like pretty shiny stuff, but chrome don't get you home. When the doo-doo is deep you want parts you can depend on, and that holds true for everything from winches to wheels.

If you're a heavy-duty Ram truck owner then you should consider the latest offerings from American Expedition Vehicles (AEV). We fitted AEV's bumper on a few months back ("Ram's Horns," Sept. 2015) and have been champing at the bit to try out the company's new wheels. AEV has long been the go-to crew for Jeepers looking to build overland style JKs, and they are now stepping sideways to offer Jeep's cousins at Ram some well thought out upgrades. These new wheel offerings are designed for on-road use (sorry, no

beadlocks) with high load ratings, but also have benefits for off-roading such as recessed valve stems and the proper backspacing for running large tires.

In addition to offering parts for Ram trucks, AEV can also build a complete Prospector package Ram fresh off the showroom floor. Our Ram is a baby compared to the complete Prospector package that AEV offers. AEV outfits a new Ram 2500 or 3500 with a bumper, a winch, wheels, suspension, 37-inch or larger tires, a tonneau cover, an elevated air intake (snorkel), and interior upgrades options. Our Ram 3500 lives on 35s, and we added a new set of BFGoodrich All-Terrain T/As when we bolted on the new AEV wheels.

A day later we hitched up our trailer and headed out on a 1,700-mile road trip. We crossed icy passes and rolled down the highway at speed, all the while dragging a Jeep behind us on a trailer. The BFGs never skipped a beat, and the AEV wheels laughed off the load and road grime. We are now ready to unhook that obnoxious trailer and take our Ram out for an adventure of its own.



4





**1** AEV offers two wheel options for the Ram HD trucks, both have an 8-on-6½ bolt pattern and a 17-inch diameter. The round-hole Katla wheels are named after a famous Icelandic volcano, whereas the straight-spoke Salta HDs are named after an Argentine city along the route of the Dakar Rally. Both styles are 8.5 inches wide with approximately 6 inches of backspacing for optimal scrub radius and are designed to fit 37-inch tires with or without fender flares.

**2** The wheels are all made of cast aluminum and rated at 3,650 pounds for plenty of load-carrying capacity. Katla are offered in a flat black, and the Salta can be ordered in flat black, silver, or an Onyx gray finish. We appreciate the protected valve stem for off-roading and the easy access to the lug nuts without needing a thin wall socket.

**3** Our Ram is upfitted with a Dynatrac free-spin kit that replaces the front unit bearing for additional mileage and rebuildable bearing hub assemblies. We ran into a dilemma when we needed to machine two of our wheels to clear the front selectable Dynaloc hubs. The new Ram HD trucks use a center axle disconnect for additional mile-

age and fuel economy, and that may reduce the demand of the free-spin kits; the option of a redesigned and remachined AEV wheel is still being considered for these larger hubs.

**4** AEV offers a full line of accessories for the Ram trucks that can transform your fresh-off-the-showroom-floor Ram into AEV's signature Prospector package. The starting price for the Prospector package is around \$14,000 and includes tires, wheels, a winch, a winch bumper, suspension, off-road lights, and other accessories. (The kit is designed for the radius arm suspension Ram starting in 2013 1/2 for 3500s and 2014 for 2500s.)

## SOURCES

**AMERICAN EXPEDITION VEHICLES**  
248.926.0256  
aev-conversions.com

**BFGOODRICH TIRES**  
877.788.8899  
bfgoodrichtires.com

**DYNATRAC**  
714.421.4314  
dynatrac.com





# 1981 JEEP SCRAMBLER



Forget everything you've been told all these years—it is the size that

counts after all. How else could you explain the emergence of Jeep Corporation's new Scrambler pickup? Granted, that still leaves the Scrambler a bit of a mystery in terms of the who, what, when, why and how of the vehicle.

The "who" is the easy part: American Motors. In their bid to imitate their home base's quick-changing weather, if you don't like AMC's current product line-up, wait six months, and they'll bring out something new. In their "scramble" for sales, market share and anything else that will take the public's mind off the negative press some of their products have been receiving, the Scrambler's mid-year introduction, to us, makes sense.

But then there is the nagging "what." First, there is the name problem. Logically, this vehicle should be called the CJ-8. The designation is clean and consistent with the rest of the CJ line (and does not bring back any discordant associations with the late AMC Rambler). Still, an off-road utility vehicle could be described in far

## CJ-8 IS ENOUGH, BUT FOR WHOM?

worse terms than "scrambler." Let's be thankful that AMC did not name this vehicle after a deep-sea fish, bullfighter or Indiana basketball team, as they have with vehicles in the past.

Okay, but let's get back to the "what." What is the Scrambler—a pickup, mini-truck, Jeep or none of the

above? After living with our bright red test Scrambler for a month, our answer would have to be "all of the above." And this is where size becomes important. The figures on the Scrambler are an odd mix and match. Comparing the Scrambler, for example, to the Jeep J-10 full-size pickup and the Chevy LUV mini-truck, the Scrambler comes out somewhere in between. In wheelbase, the Scrambler is very close to the LUV, (slightly over an inch longer) and a good 15 inches shorter than the J-10. Yet the Scrambler is more than 5 inches wider and nearly 7 inches taller than the LUV, which explains the consensus of those who drove the Scrambler that it wasn't quite a mini-truck. By Gross Vehicle Weight Rating (GVWR), the Scrambler (4150 pounds) comes closer to the LUV (3750 pounds) than it does to the J-10 (6200 pounds). The spread between payloads of the three vehicles is



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not nearly as pronounced with the Scrambler (1500 pounds) again coming in between the LUV (1485 pounds) and the J-10 (1700 pounds). The Scrambler loses to both LUV and J-10 in the cargo box. The Scrambler's five-foot bed is three feet shorter than the J-10 and a foot shorter than the LUV. Yet total cargo capacity (box length x width x height) favors the Scrambler over the LUV due to the former's 16-inch wider box. That's good news if you have a lot of square objects to carry. Unfortunately for the Scrambler, most motorcycles are not square and won't fit into the stubby box. Additional bad news (or poor design) is the Scrambler's convenient swing-away spare tire carrier, which provides easy access to the tailgate but hangs out in space, making driving with the tailgate down impossible. As a cargo hauling pickup, the Scrambler makes a pretty good conventional Jeep.

Moving on to the "when," when we tested the Scrambler we were pleasantly surprised. Ignoring the semantics of what to call it or how to describe it, the vehicle is all Jeep. Sharing most major dimensions (except wheelbase) with the CJ-7 (width, height, ground clearance, track), the Scrambler feels and drives like a Seven, except in cornering, when the extra 10 inches between the wheels makes the newcomer much more stable. At the same time, the light rear end and extra sheet metal make the Scrambler slightly less maneuverable on tight trails.

The standard 151cid Hurricane four



PHOTOGRAPHY: BARRY WIGGINS & RICK YOUNG

## AN IDEA WHOSE TIME HAS COME (AGAIN)

**A** fun-loving, sun-loving convertible... "No matter how you look at it, it's like nothin' you've ever seen..." That's how AMC's print ads describe the Scrambler. But in the search to find the proper name to describe this innovative new truck, one name has been forgotten: roadster pickup. Back before cars and trucks had filled steel roofs, they had cloth inserted over wood frames or they had no roof at all. The ragtop roadster pickups that were an inconve-

nience 50 years ago are the collectors items, and apparently trendsetters, of the 1980s.

We couldn't resist the temptation to compare our test Scrambler with a handy 1929 Ford Model A Roadster Pickup. Besides the wide open spaces overhead, both the Jeep and A share short beds, similar hood-latches, running boards (step plates on the Scrambler), similar taillight/license plate mount, and remarkably close wheelbases.

It's nice to have the open-air pickup back. But like nothing you've ever seen before? It depends on where you look.

—Craig Caldwell



1. The Scrambler features an integral pickup bed, unlike any pickup on the market except the VW Rabbit. The 3-inch tube rollbar is standard on all models, but the bed side rails, which we found to be annoying, are optional.

2. The high-back bucket seats are comfortable and offer good body support. The familiar CJ dash and fold-down windshield make it hard to forget that the Scrambler is a Jeep at heart. Behind the seats is room to stow the soft top, but little else.

3. The engine on our test Scrambler was the dependable 151cid four-banger that pulled 85 horsepower (at 3650 rpm) on the BAE dyno—capable off-road, but not exactly a stoplight hero.

## FROM THE 4W ARCHIVES

In 1981, Jeep introduced the CJ-8 Scrambler and *4WOR* reviewed it, and we wanted to revisit that article. At the time the editors weren't very sure what the point was. It was an anomaly in the market, something of a Jeep-based El Camino or Avalanche. Over the years the longer wheelbase and additional storage made the Scrambler a very desirable model, even more so after production ended. Of course, the longer TJ Wrangler Unlimited (LJ) and eventual JK Wrangler Unlimited all grew out of the big-for-its-time Scrambler. With a new Wrangler coming soon and in all likelihood a pickup truck version, it is interesting to see where it came from.



## 1981 JEEP SCRAMBLER

is an adequate, though hardly exciting, powerplant. Though EPA estimated at 22 mpg, the best we could squeeze from combined city/highway driving was 16.4 mpg. The optional 258cid 6-cylinder engine-equipped Scrambler, which we drove for comparison, is a much better performing package around town, though off-road

or once up to freeway speeds the 151 holds its own. As for the rest of the drivetrain, suspension, and so on, it's all CJ. If you like the feel, engineering and dependability of the Sevens and Fives, you'll like the Scrambler.

The styling and interior of the Scrambler are strictly CJ as well. From the windshield forward, the Seven and Scrambler are identical, except for the tape stripes. Inside the cab, the dash, gauges, seats, shifter and steering column are identical as well. The soft top Scrambler even has the familiar CJ

flapping and wind noise. Driving the soft top version, you hardly notice that someone has replaced the back seat with a large plastic rear window. Visibility in the pickup is very good with the top in place. With the top down, the Scrambler feels like no full-size or mini-truck you're ever likely to buy from any other factory. The Scrambler seems to say that driving a pickup truck can be fun again (see accompanying sidebar). With the hardtop in place, visibility remains good, but the flapping canvas is gone. Along with



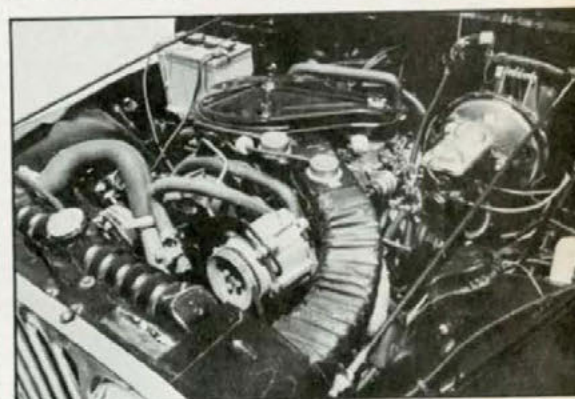
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5



6



7

4. Removing the soft top from the bed is easy, but climbing into the bed, because of the absence of a side step and the presence of the bed rail, is a real challenge.

5. On the plus side, the swing-away spare tire carrier is a nice feature. But the tailgate is narrow, considering the very wide bed, and does not have what could be called secure latches.

6. In hardtop form, the Scrambler takes on a more formal personality. Gone is the familiar ragtop flapping and plastic windows. The hardtop gives the truck extra security with roll-up windows and locking doors without sacrificing (in fact slightly improving) the Scrambler's good driver visibility.

7. The optional lightweight 258cid inline six seems better suited to the 2650-pound truck, at least for those drivers who still don't mind paying a slight mpg penalty for added performance.



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27x9.50-15LT	4	7	9.5	7 1/4	26 1/2	2.66	98.94	69.26
9.5-15LT	4	7	9.5	7 1/4	30	3.32	110.13	77.09
11-15LT	4	8	11.6	9	30 1/2	4.05	145.05	101.54
12-15LT	4	10	13.3	10	31 1/4	4.58	164.78	115.35
12-15LT	6	10	13.3	10	31 1/4	5.27	183.23	128.27
9.5-16LT	4	7	9.5	7 1/4	30	3.52	114.58	80.21
11-16LT	6	8	11.6	9	30 1/2	4.25	157.01	109.91
11-16.5LT (NEW)	6	8 1/4	11.6	10	30 1/2	4.39	158.45	110.92
12-16.5LT	6	9 1/4	13.3	10	31 1/4	5.05	187.59	131.32

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4-WHEEL & OFF-ROAD AUGUST 1981 • 55



# 1981 JEEP SCRAMBLER

the roll-up windows and locking doors, the hardtop gives the Scrambler a finished feel, much more like the stodgier J-10 than a CJ.

The "why," in light of living with the Scrambler on a day-to-day basis, really becomes a "why not." Though Jeep Public Relations describe its purpose as a vehicle "designed to combat the

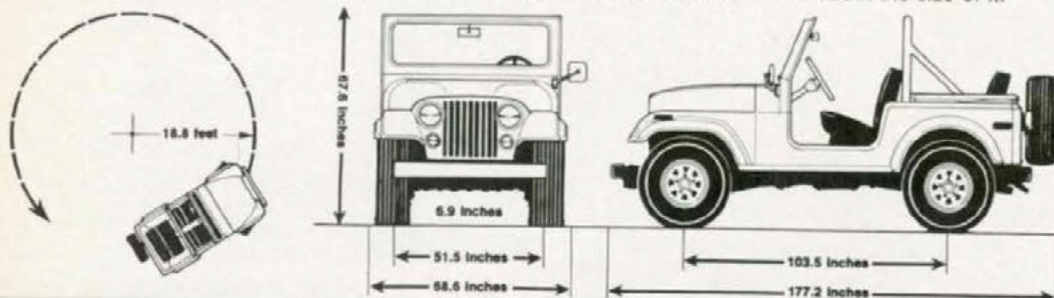
surge of imported mini-trucks," the Scrambler is not an American-built mini. Whether its buyers will come from the ranks of mini-truck buyers or from full-size pickup and CJ buyers is yet to be determined. Like the cheese in Farmer In The Dell, the Scrambler stands alone.

And that brings us at last to the "how." How do you decide what size pickup truck is right for you? For the work truck buyer, payload, GVWR and cost-per-mile are the deciding factors. But, for the average recreational truck

buyer, these figures are less important. Obviously, AMC is gambling some dollars that a sizeable segment of the market will scramble over to its not-quite mid-size alternative. With the heart of a CJ and the utility of a pickup, the Scrambler somehow manages to not compromise either.

More mid-size pickups are due from Ford and GMC next year, so the Scrambler could be viewed as the shape of trucks to come. We have seen the future and it ain't bad. And that's about the size of it.

4WOR



## 4-WHEEL & OFF-ROAD/ROAD TEST SPECIFICATIONS AMC/JEEP SCRAMBLER

### GENERAL:

Vehicle: AMC/Jeep  
Model: Scrambler  
Base Price: \$7283  
Options: Wrangler radial tires, 3.73:1 axle, center console, body side step, bed side rails, halogen fog lamps, tonneau, sport pkg., rear Trac-Lok, power steering, H/D shocks, H/D battery, soft top, halogen headlight, chrome wheels, power brake (disc), tilt wheel, AM/FM stereo.  
Price As Tested: \$9982

### ENGINE:

Type: Inline 4-cylinder  
Displacement: 151cid (2.4 liter)  
Bore & Stroke: 4.00x3.00 inches  
Carburetion: 2-bbl.  
Fuel Requirement: Unleaded  
Fuel Capacity: 15 gallons  
Oil Capacity: 4 quarts  
Radiator Capacity: 7.8 quarts

### TRANSMISSION:

Type: 4-speed manual  
Ratios: First: 4.07:1; Second: 2.39:1; Third: 1.49:1; Fourth: 1.00:1; Reverse: 3.95:1

### TRANSFER CASE:

Type: Dana 300 2-speed  
Ratios: 4-Hi: 1.00:1; 4-Low: 2.62:1

### AXLE RATIOS:

Front: 3.73:1  
Rear: 3.73:1

### TEST RESULTS:

Rear Wheel Horsepower: 86 hp @ 3650 rpm  
Rear Wheel Torque: 133 ft/lb @ 2450 rpm  
Horsepower To Weight Ratio: .03 hp/lb

### WEIGHT BALANCE:

Curb Weight: 2650 lbs.  
Front: 1670 lbs.  
Rear: 980 lbs.  
Advertised GVW: 4150 lbs.

### BODY & FRAME:

Chassis: Ladder frame  
Body: Steel cab, separate bed  
Cargo Capacity: 32.5 cubic feet

### SUSPENSION:

Front: Leaf spring  
Rear: Leaf spring

### STEERING:

Type: Power recirculating ball  
Turns Lock-To-Lock: 3.7

### BRAKE SYSTEM:

Front: Power-assisted disc  
Rear: Drum  
Parking: Mechanical expanding rear shoe

### WHEELS:

Type: Chromed steel  
Size: 15x8

### TIRES:

Type: Goodyear Wrangler Radial  
Size: 10R-15

### MILEAGE:

EPA Estimate: City: 19 mpg; Highway: 22 mpg  
Actual: City: 18.4 mpg; Highway: 18 mpg

### PERFORMANCE:

0-30: 5.1 seconds  
0-60: 14.3 seconds

### STOPPING DISTANCE:

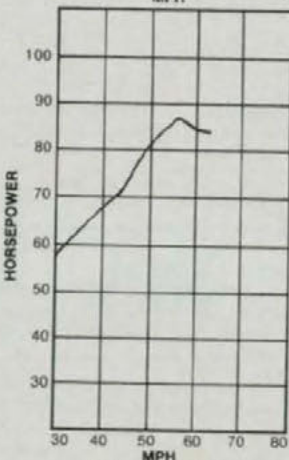
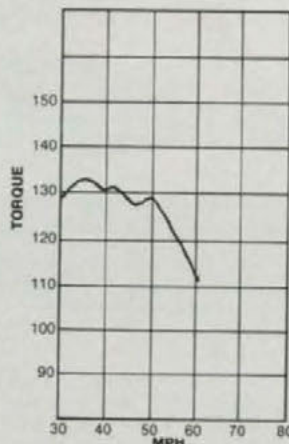
30-0: Pavement: 56 feet; Dirt: 71 feet  
50-0: Pavement: 89 feet; Dirt: 110 feet

### SPEEDOMETER CALIBRATION:

Indicated: 20 30 40 50 60 70  
Actual: 19 30 38 48 60 71

### OPTIONS:

ITEM	DESCRIPTION/PRICE
Automatic Transmission	\$350
Power Steering	\$208
Power Brakes	\$79
Air Conditioning	\$599
FM Radio	AM/FM, \$224
Engine Performance Package	258 inline six, \$136
CB Radio	N/A
Extra Fuel Tanks	N/A
Locking Hubs	N/A
Posi-Trac/Ltd. Slip	Std.
Skidplates	Std.
Rollbar	Std.
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Winch	N/A



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## PART 4: BUILDING A CUSTOM LINK SUSPENSION

# LINKED IN

by Harry Wagner

PHOTOGRAPHY HARRY WAGNER

**T**HE WELDS HAVE FINALLY cooled on the custom suspension on our Tracker project ("Learn From Our Mistakes," Feb. 2016). We went to Jesse Haines Fabrication and asked him to create a lightweight suspension that would be stable on the street while providing plenty of flex on the trail. Haines completely cut off the front and rear frame rails to start with a blank canvas and fabricated new box tube framersails that are narrower to allow for additional tire clearance and suspension packaging.

Keeping weight in mind, Haines built the lower suspension links from 1 $\frac{3}{4}$  x 0.120-wall chromoly tubing and the upper links from 1 $\frac{1}{2}$  x 0.095-wall chromoly. The front and rear lower links are all 34 inches, and we plan to have them heat treated. In its natural form, chromoly is only marginally stronger than 1020 DOM tubing, but heat treating increases the strength of chromoly tubing by 44

percent. All of the links are fitted with top-of-the-line XM chromoly rod ends, jam nuts, and threaded bungs from Rod End Supply. In addition to being chromoly, the XM rod ends use Rod End Supply's proprietary Nyl-fiber matrix race that is self-lubricating, decreasing wear and noise and increasing the life of the rod end. The improved strength of Rod End Supply's chromoly rod ends allowed us to run  $\frac{7}{8}$ -inch shank,  $\frac{3}{4}$ -inch bore rod ends on the lower suspension links and  $\frac{3}{4}$ -inch shank,  $\frac{5}{8}$ -inch bore rod ends on the upper links. A  $\frac{7}{8}$ -inch chromoly XM rod end is comparable in strength to a 1 $\frac{1}{4}$ -inch mild steel rod end but saves a pound and a half each. With four suspension links on each axle and two joints per link, the weight adds up quickly.

Haines built three-link configurations with a single upper link and a track bar at each end of our Tracker. Some have expressed concern about inconsistent handling with both track bars mounted on the frame on the driver side and the axle on the passenger side, but Haines has built many championship-winning

buggies with this suspension configuration in the past. Haines feels that the track bar angle plays a large role in how the suspension performs, and both of our track bars are completely horizontal at ride height. While we do not currently have a sway bar on the Tracker, there is space to package a track bar in the rear and we will report back in the future on whether that is necessary.

Note that information pertaining to the steering in this installment as well, since it is intertwined with the suspension. Haines noted that if we were building a dedicated off-road vehicle, it would be easier to package fully hydraulic steering with a double-ended ram, but we made some compromises in order to retain street manners.

From the factory, our Tracker had an 86-inch wheelbase and a track width of 67 inches. Now it sits on a 101-inch wheelbase with a track width of 74. The belly sits at only 18 inches for excellent stability, yet the suspension provides 4 inches of uptravel so it can still travel at speeds above a crawl without bottoming out over the slightest irregularity.



**1** The front suspension uses a three-link configuration with a track bar. The lower links locate the axle, the upper link keeps the front axle from rotating, and the track bar locates it side-to-side. With a parallel track bar and draglink, this configuration provides plenty of articulation with very few compromises.

**2** The front shock hoops were constructed from 1½x0.095-wall DOM tubing and tie together with a simple 1-inch crossover tube for strength and rigidity. No need for tube clamps, Jesse Haines Fabrication simply put a threaded bung in each end to make the tube removable to access the engine.

**3** Our original plan involved using a Toyota steering box outside of the frame. This created packaging issues with the track bar bracket, and the tire rubbed the steering box at full lock. A Saginaw box from a Jeep Wagoneer was instead mounted inside of the framerails. The stock steer-

ing rack and crossmember weighed 45 pounds; the new Saginaw box weighs 28½ pounds.

**4** The track bar and draglink are completely parallel and nearly flat at ride height. Haines previously fabricated front framerails that are higher and narrower than the stock frame, allowing for 4 inches of uptravel from the ADS air shocks with a relatively low ride height.

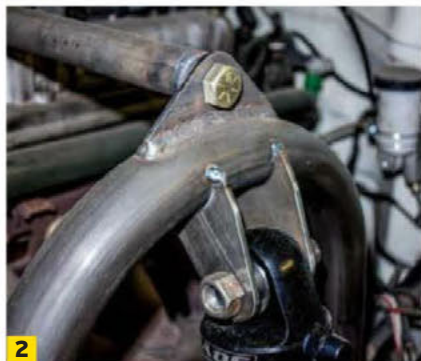
**5** The Hellfire Fabrication steering arms provide various tie-rod and draglink mounting configurations. We ended up with the tie rod mounted below the draglink and under the steering arm in the rear mounting hole. Note that stacking steering components like this can only be done with spherical rod ends, not traditional tapered tie-rod ends.

**6** Moving the front axle forward 9 inches created some challenges. Looking down into the engine bay, you can see how the track bar runs right under the crank pulley, with the draglink in front of it. The front differential barely clears the oil pan at full compression, but we did not need to modify the pan.

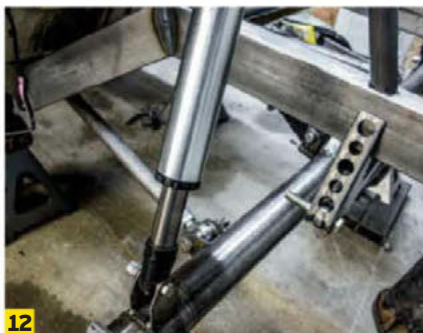
**7** Haines fabricated this trick double sheer steering arm since we are using Rod End Supply chromoly rod ends and high-misalignment spacers rather than tapered tie-rod ends for our tie rod and draglink. The draglink uses ¾-inch Rod End Supply chromoly XM rod ends and 1½x0.120-wall chromoly tubing.

**8** We sourced all of the rod ends, jam nuts, and threaded bungs for our Tracker project from Rod End Supply. RES has products for every application and budget imaginable. We used the company's XM line of chromoly rod ends with Nylafiber self-lubricating inserts. If you already know the length of your control arms, RES will even send you fully welded links constructed from DOM or chromoly that are ready to bolt in.

**9** While it was possible to cut the factory bracketry off the stock frame, Haines found it easier to just remove the framerails and construct new ones out of 2x4, 0.083-wall box tubing. The rear sheetmetal went away when the fenders were cut, but we plan to have CR Fabrication build new panels in a future installment of our Tracker project.







**10** Simple tubular shock mounts were built for the rear pair of ADS air shocks. Note how the shocks are mounted as wide as possible to increase stability. The air shocks are tilted in at ride height. Haines explained that this positions the shock perpendicular to the axle at full extension, not over center where the spring rate becomes digressive.

**11** The rear suspension, like the front, uses a three-link with a track bar. The upper mount sees a tremendous amount of rotational force, so Haines tied this piece into multiple crossmembers. The offset Samurai transfer case from Trail Tough allows the upper link to be centered in the chassis.

**12** We are using 2½-inch-diameter, 12-inch-travel ADS air shocks at each corner. These shocks only weigh 14 pounds each and are quite compact, but if you want more control over spring rates, ADS also has a full line of coilover shocks that offer a lot of features for the price.

**13** Some people have expressed concern about having the track bars at both ends of the Tracker mounted to the chassis on the driver side and the axle on the passenger side. Jesse Haines Fabrication has built numerous

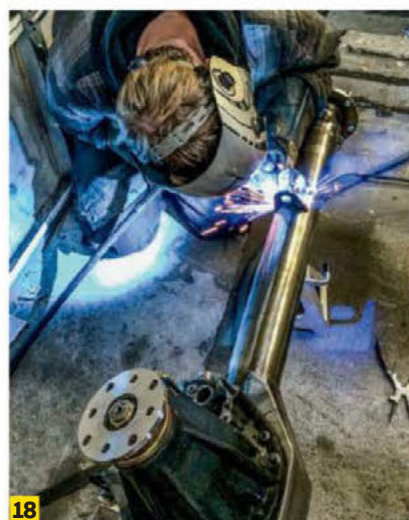


competition rockcrawlers in this way without issue. Haines explained that the key is to build brackets that place the track bar flat at ride height to prevent a jacking effect.

**14** The lower links sit in the center of the axletube to maximize ground clearance. Putting the links in the center of the tube requires a taller bracket for the upper link in order to get the vertical separation necessary to prevent the axle from rotating under acceleration and braking.

**15** The lower links are mounted inside of the frame so there is no contact at full compression. The links are 34 inches long, which Haines feels is long enough for ample articulation without being so long that they compromise strength and ground clearance. The lower links are also the same length front and rear to minimize the need for spare parts.

**16** While we used misalignment spacers from Rod End Supply on the draglink, the rest of the company's spherical rod ends were used in conjunction with weld washers on the bracketry. These washers allow increased movement without the need to reduce the size of the hardware used, such as a misalignment spacer requires.



**17** One trick Haines showed us was to use the ball out of an old rod end for fitment during welding. Welding the inside of the mounts first will pull them together, then welding outside will spread the bracket to its desired width.

**18** Once the suspension was cycled and all of the mounting was decided, Haines final-welded all of the bracketry in place. Prior to that the brackets were only tack-welded for mockup, in case any changes were necessary.

## SOURCES

**ADS**  
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**By Fred Williams**  
**PHOTOGRAPHY FRED WILLIAMS**

**I** F I ASKED YOU TO DESCRIBE AN African safari trip, 99 percent of you would mention a Land Rover. The boxy British 4x4 is so ingrained in our image of overlanding and adventure that you see them in most any advertisement that is trying to sell the general public an off-road adventure product. "This coffee will make your adventure great!" Ad shows a rugged guy drinking coffee beside a Land Rover. "This cigarette will make your adventure awesome!" Who remembers the Camel Cigarette guy always standing next to a Land Rover? (Cigarettes cause cancer, kids. Don't smoke.) "This toilet paper will make your adventure less poop!" OK, I've never seen an ad with a guy walking

away from a Land Rover carrying a shovel and roll of Charmin, but you get the picture. Land Rovers equal adventure.

So last year when I was heading to the Overland Expo I decided that driving there in an old Land Rover would be fun (and it would make my adventure more adventuresome because every advertising agency ingrained that image in my head). I called up my friends at Land Rover and asked if they knew of an older Rover I could borrow, and lo and behold they had one in storage.

Now, there are old Land Rovers and there are not-so-old Land Rovers. What they had in storage is a not-so-old 1992 Land Rover Defender 110. It looks very

similar to the older version Series 109 Rovers of your African safari dreams. (By the way, my grandfather actually went to Africa to teach the locals how to better raise cows. He was a successful dairy farmer, and while there he drove around in a Land Rover, so that image is based on truth, not just advertising brainwashing.) The older Series Rovers are cool, but the Defender was a later upgrade that came to the United States in the early 1990s and had coil-sprung suspensions, V-8 engines, and only slightly more refined interiors (as in still beautifully sparse and rugged). So when the Rover folks told me they had this 110 sitting idle I jumped at the chance to take it for an adventure.

## LIVING WITH AN OVERLAND ICON

# DEFENDING THE BRITISH







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**1** Under the hood of this 110 is a 3.9L aluminum V-8 that feeds an automatic transmission and full-time transfer case. Fuel economy isn't great, and neither is off the line acceleration, but the engine chugs along and gets you there eventually. The automatic wasn't original (all U.S.-spec Defender 110s had five-speed manuals), and the engine was actually swapped in after an earlier one gave up the ghost. In fact, this was a very early Defender 110 brought to the U.S. for engineering tests and to determine whether it would live in the U.S. market, so it earned roughly 100,000 miles in a year of crisscrossing the states.

**2** The Defender 110 has a coil link suspension. The axles are quite narrow, and the tall skinny truck on tall skinny BFGoodrich Mud-Terrains can feel a bit tipsy weaving along mountain roads. Plus, we added a James Baroud rooftop tent for a nice place to sleep (and an even more adventurous look if that is possible), which definitely didn't help the body roll issue.

**3** The driver's seat of the 1992 Land Rover Defender 110 is a cramped little place with a great view. The Defenders seemed to be designed more for right-hand drive countries (like Britain) because with the steering wheel moved to the left-hand side the cockpit gets extremely tight. The fact that you almost have to open the driver's window and hang your arm

out to get enough personal space will make claustrophobes uncomfortable, but the large flat windows gives excellent visibility so you don't feel too confined.

**4** Driving a Defender 110 requires you to change your perspective on things. It's not really fast so you can't be in a rush, but it's very capable so you need to make time to explore with it. Plus, people see the square styling and factory external safety cage work and love to stop and talk about it. You could be going for groceries and people would assume you had just crossed the Amazon and made a breakfast of crocodile eggs and cactus syrup pancakes earlier that morning because you're in a Defender. The full-time 4-wheel drive and upfitted ARB Air Lockers meant snowy mountain roads were hard to ignore. The front winch bumper and Warn 8274 meant we were in good hands if we ran out of talent.

**5** The Defender 110 is on many of our bucket lists to own, but prices on used ones are only going up. They look cool, and as such we always wanted to test one out. After driving one for a week we can say we still want one to own. Sure, it's a bit slow, less than spacious, and kind of funky (the key goes in the left side of the steering column?!), but it's very capable off-road and very unique. There is a fair bit of aftermarket support to modify these rigs, and if you're not in a major rush it could take you around the world.

**6** The Land Rover Defender and the Jeep Wrangler are both very similar in package size and styling, and in the next few years both will be reworked. The Defender hasn't been available in the USA since 1997, and only 500 of the 110 models (longer wheelbase, four doors, only offered in white) were ever offered for sale in the U.S., all sold in 1993. After that, Land Rover offered the shorter, two-door Defender 90. Due to a lack of required safety items like airbags and Land Rover's switch to a more upscale vehicle lineup, the automaker hasn't had as rugged a vehicle for the U.S. market, but rumors are that this will change with the new Defender. Of course, the sparse number of 1993 110s means their value has skyrocketed, but because the Defender model ran from 1983 up to 2015 in the rest of the world many U.S. Rover enthusiasts have imported foreign-spec trucks.

**7** Look at this guy. It's pretty obvious he is going on an adventure, even with two little dogs, his bright red *Back to the Future* jacket, and aviator sunglasses, you can tell he's an outgoing guy looking for his next mountain to climb because he's standing in front of a Defender 110. 🐾

## SOURCE

LAND ROVER  
landroverusa.com



BY Jay Kopycinski PHOTOGRAPHY JAY KOPYCINSKI

**W**HAT DO YOU DO WHEN YOU HAVE A VINTAGE Bronco and want stronger V-8 power? You probably look to Mustang engines. But what if you already have a hot rod pony powerplant and want more?

If you're John Carnahan, you look for a way to stuff a Ford Motorsports aluminum Coyote crate engine into your classic steed. Carnahan had a mid-1980s

built 302 V-8 in his 1966 Ford Bronco when he approached Tanner Lamb of Lamb Fab in Gilbert, Arizona, about squeezing the more modern engine between the framersails of the half-century-old Ford.

Carnahan purchased a Coyote crate engine from Ford Performance. This "Aluminator" engine is a 5.0L Four-Valve unit with an 11:1 compression ratio and comes complete with a manual transmission engine injector harness. Lamb Fab pulled the existing engine and started working to fit the wider, modular Ford V-8 under the hood. The work required modifications to the fenderwells, front cowl, steering shaft, and front driveshaft along with all the other usual changes that have to be made when a different engine is swapped in.

For this swap, the Coyote engine was mated to a six-speed auto tranny salvaged from a 2013 F-150. This in turn was adapted to the existing Dana 20 transfer case that has a twin-stick shifter setup.

The results are impressive to say the least. With 400-plus horsepower on tap, there are plenty of ponies to make this Bronco move rapidly. With backing of the six-speed, the engine is always in powerband and drivability is awesome, especially when compared to the older three-speed C4 auto it had previously. It is super smooth now.

Follow along as we detail some of the tasks needed to complete this swap.

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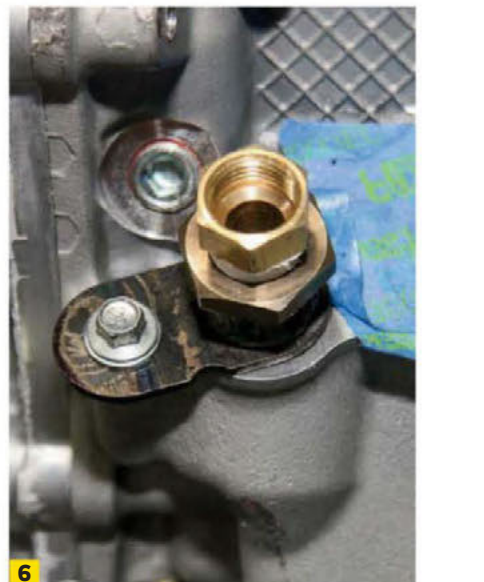
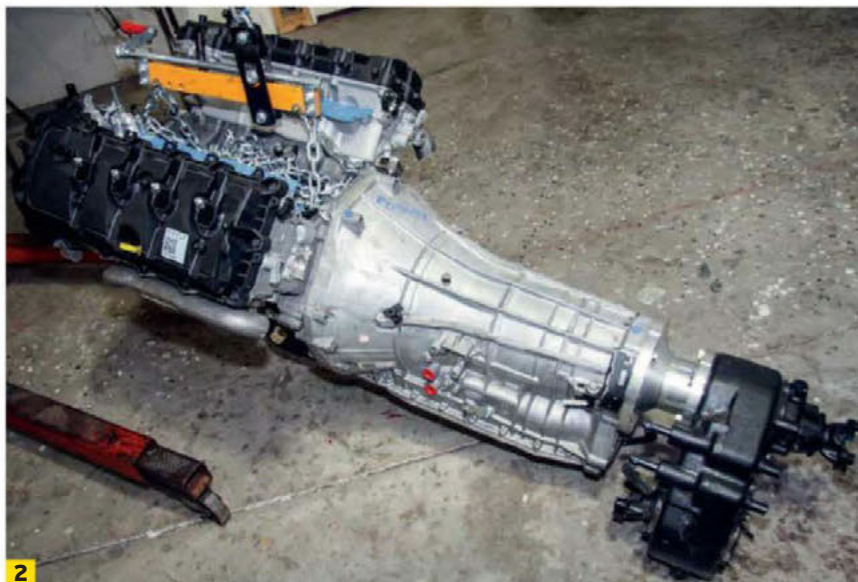
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**1** The 5.0L Coyote is rated at 412-plus horsepower and comes complete from oil pan to heads with a fuel injection system. It includes a tuned composite Mustang GT intake manifold with an 80mm throttle body. The alternator is not included.

**2** The complete powertrain is temporarily assembled for test fitting. It is a clean setup adapting modern to vintage for this classic Ford. The six-speed auto transmission is from a 2013 F-150. In the final configuration, drive-shaft lengths were unchanged. However, some mods were made to the front driveshaft to clear the larger transmission. No CV joint was used, but high-angle U-joints were needed.

**3** An adapter from Tumblin Off Road was sourced to mate the modern auto transmission to the Dana 20 that was already in the Bronco. Multiple bolt holes on the adapter allow for numerous clocking configurations to place the t-case at almost any angle relative to the transmission.

**4** To best mate the engine to the Bronco framereils and make moving the engine in and out easier, Lamb Fab fabricated an engine cradle under the oil pan that bolts to full-metal engine mount plates using urethane bushings. The cradle then sits in a set of pocket brackets on the framereils. Determining the final engine



placement took some time to ensure that the hood, radiator, and firewall clearances were maintained.

**5** Ford Racing headers were used but modified a bit to fit around the inner fenders and steering shaft. Lamb Fab cut off and reworked some of the tubes as needed.

**6** The Coyote engine computer itself monitors water temperature and oil pressure. Owner



John Carnahan also has a suite of Autometer gauges in his dash. The mechanical water temp sensor was plumbed into one of the heater ports on the new engine.

**7** Since the Coyote engine was primarily designed for late-model Mustangs that use electric power steering, no steering pump is provided on the engine. Lamb Fab used an F-150 truck pump mounted to a bolt-on Ford Racing bracket designed for this application.





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8



9

**8** Here's a shot looking at the front serpentine belt system on this engine. A Ford Racing alternator was added, and you can see the added power steering pump. A longer belt was sourced to accommodate the additional pulley.

**9** As work progressed, the engine was placed in and pulled out of the engine bay a number of times for fit checks. The Coyote engine is a good bit wider across the cylinder heads than the older 302 V-8 it replaces.

**10** The Bronco uses a 1980s Ford 2WD steering box and a Borgeson shaft. The position of the Ididit steering column had to be modified, as did the inner fender panel in order to push the steering shaft a bit more to the driver side to clear the wider engine. You can also see the beginning of a frame mount to capture the engine cradle.

**11** The shop fabricated this simple, high-clearance mount for the adapter at the end of the transmission. It mates with two pairs of tabs on the inner framerails and attaches with two bolts.

**12** The radiator is from a late-model Thunderbird; it is very slim and packaged well. The Coyote engines are quite thermally efficient, so very large volumes of coolant aren't needed. A 60-plus-psi inline electric pump was installed along the framerail to feed fuel to the new engine.

**13** The radiator is a closed-style, having no top radiator cap. An inline radiator fill assembly was used, simply spliced into the upper radiator hose. Hoses are late-model Mustang pieces. All hoses were secured with heat-shrink hose clamps.

**14** These modern motors usually require a cooling system steam line. In this case it was run with a rubber hose to a connection at the top of the radiator. This radiator also had an integrated cooler for the transmission fluid with inlet and outlet connections.

**15** A set of factory Ford steel fluid lines was mated to the automatic transmission and routed forward. They were cut off just forward of the crank pulley, and compression fittings were used to adapt to rubber lines leading to the cooler integrated in the radiator. Also tucked up on the bottom side of the engine is an OEM Ford starter. Wiring was straightforward, and the existing Bronco connections were all used on the new starter.

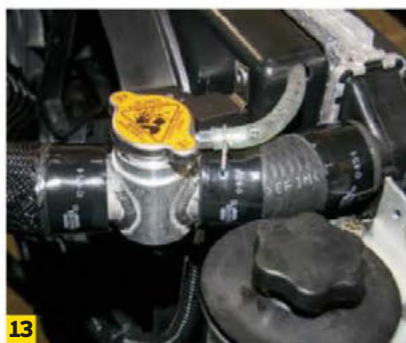


10

**“Modern motors require a steam line”**



11



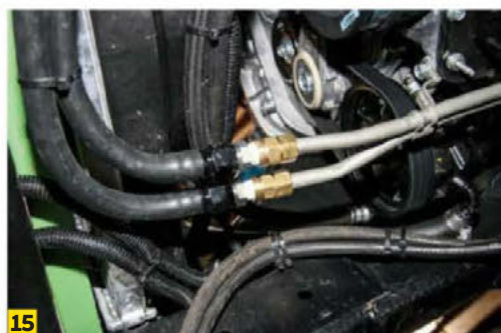
13



12



14



15





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**16** A remote power steering reservoir from a late-model Mustang was mounted up near the cowl on the passenger side along with a small cooler for the steering system. Low- and high-pressure pump lines were custom fabricated and run from the pump on the passenger side to the steering box on the driver side.


**17** Lamb Fab used an auto shifter from the 2013 F-150 that's designed to work with the six-speed transmission. Functions include manual tap-shift capability and tow/haul mode selection. The shop fabricated a metal console to mount and house the shifter, then had it covered in bedliner material to match the interior floor of the Bronco.

**18** The transfer case shifter assembly was custom fabricated. The shifter mount is bolted to a tab point on the new transmission.

**19** The Coyote engine control uses signals from a drive-by-wire throttle assembly so no mechanical throttle cable routing is necessary. Lamb Fab installed an accelerator pedal assembly from a 2013 F-150.

**20** A Ford Racing engine harness was used along with a 2013 F-150 engine computer. It was programmed by Lamb Fab and sits on the passenger-side wheelwell just ahead of the battery. These units are designed to survive heat and vibration under the hood, so mounting here is no problem. A Bussman fuse box on the inner fender provides overcurrent protection and cleans up the power supply wiring.

**21** Along with using the slim radiator with the new engine, Lamb Fab cut out much of the original cowl. Lamb Fab then bridged the area with a new crossmember that preserves the strength but is much more compact.

**22** The air intake was put together from generic air intake fittings, and a large Spectre open element filter was isolated in a cold air box. The finished engine swap looks superclean sitting in the Bronco. It fits, but there's very little leftover airspace under the hood. 

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# NEW PRODUCTS



## DAYSTAR JEEP RENEGADE LIFT

Daystar Products offers a 1½-inch lift system for the new Jeep Renegade. The kit is designed to be totally bolt-on and easy to install, and it is FMVSS 126 compliant. Claimed benefits include factory ride quality and stability while being able to go up two full tire sizes. **INFORMATION:** Daystar Products, 800.595.7659, daystarweb.com.

## BANKS BULLET FOR 3.0L ECODIESEL

The newest Banks Power tuner is for the EcoDiesel in the Dodge Ram and Jeep Grand Cherokee. The unit features multiple on-the-fly power levels and a boost gauge, and displays engine functions. The system is engineered to safely add up to 31 hp and 54 lb-ft of torque. The kit includes all required components, including a mounting panel. Options include a pillar-mount. **INFORMATION:** Banks Power, 800.601.8072, bankspower.com.



## MEAN MOTHER PLATINUM RECOVERY

Mean Mother now offers a Platinum line of Australian-engineered premium recovery items. Three recovery straps and four recovery kits have been added to the lineup.

Platinum products include higher-capacity tree trunk protectors with high-visibility reflective text, extension straps, equalizer straps, bow shackles, and snatch blocks. **INFORMATION:** Mean Mother, 909.476.6068, meanmother.com.au.



## WILWOOD EARLY BRONCO DISC UPGRADE

Wilwood's D8-4 caliper brake upgrade kit for Dana 44 front-axled 1976-1977 Broncos is engineered to help stop larger-than-stock tires. D8-4 forged aluminum four-piston calipers replace the OE cast-iron single-piston units. Combined with 12.19-inch-diameter, two-piece directional vane rotor assemblies, the benefits of the kit are increased brake leverage, added cooling capacity, and reduced overall weight. The kit comes with pads, new wheel studs, braided stainless steel flexlines, and all the necessary mounting brackets and hardware. **INFORMATION:** Wilwood Engineering, 805.388.1188, wilwood.com.



## SUPERCHIPS TRAILDASH 2

The new TrailDash 2 is touted by the maker as having state-of-the-art technology. This in-cabin controller monitors vital vehicle parameters using a color 5-inch swipe-screen display. Other features include one-touch navigation and fully customizable backgrounds. **INFORMATION:** Superchips, 888.227.2447, superchips.com.





## ROGUE 4 RGB LIGHT BAR

The Rogue 4 RGB series features a high-powered LED light bar with built-in RGB accent lights. Housings are made from black aluminum, and mounting hardware is included. The double-row Delta Series (shown) is available in lengths ranging from 6 to 50 inches. **INFORMATION:** Rogue 4, 877.938.7757, [rogue4.com](http://rogue4.com).



## FIDANZA JEEP FLYWHEEL

A high-inertia flywheel for the popular 4.0L Jeep I-6 engine is now available from Fidanza. Intended to improve low-rpm performance for rockcrawling, this flywheel is 16 pounds heavier than original equipment. It is made from 1045 forged billet steel and fits 1991-2004 Jeep 4.0L engines. **INFORMATION:** Fidanza Performance, 440.259.5656, [fidanza.com](http://fidanza.com).



## MILLERMATIC 125 HOBBY WELDER

Intended for farm, home, and light fabrication applications, the new Miller-matic125 Hobby from Miller Electric is marketed as an easy-to-use, beginner's welder. The MIG and flux-cored-capable Miller-matic 125 Hobby works off standard 115-volt household power. It MIG-welds 24-gauge to 3/8-inch material and welds 18-gauge to 3/16-inch material with flux-cored wire in a single pass. The machine's simple two-knob design allows for easy setup and use, and the unit weighs less than 50 pounds. MSRP is \$549. **INFORMATION:** Miller Electric, 920.734.9821, [millerwelds.com](http://millerwelds.com).

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## NEW PRODUCTS



### BD DIESEL TURBO KITS FOR DODGE 5.9L/6.7L

BD Diesel's S400 turbo kits are engineered to produce between 600 and 950 hp. Components include a fresh-air intake housing containing an 8-inch OD washable air filter with velocity stack to provide cool air to support up to 800-plus horsepower. The BD custom and compact single-piece 90-degree compressor covers the S467 to S482 BorgWarner turbos, which are mounted on BD's wastegate-ready Pulse T4 exhaust manifold. Kits come complete with all supporting hardware and piping. **INFORMATION:** BD Diesel, 800.887.5030, [dieselpower.com](http://dieselpower.com).



### RUBICON EXPRESS JK COILOVERS

Rubicon Express offers a JK coilover conversion kit featuring Fox shocks. It is designed to supplement Rubicon Express' Extreme Duty long-arm suspension systems. The advantages include increased wheel travel, optimized shock damping, and the ability to customize spring rates to suit specific needs. Fox's threaded shock bodies make it easy to fine-tune ride height. Remote reservoirs increase fluid capacity for cool, consistent shock damping. **INFORMATION:** Rubicon Express, 800.776.0767, [rubiconexpress.com](http://rubiconexpress.com).





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## RAM 1500 GEARING OPTIONS

**Q** I just bought a 2015 Ram 1500 4x4 EcoDiesel. As much as I want to do the deletes and lift the truck, I want to tackle the plagued front axle first. There are no traction devices for these trucks due to the fact that the design has weak points, allowing them to grenade. Short of a custom-built 9-inch IFS or a 2500 AAM 9¼-inch solid axle swap, what other truck companies with stout IFS axles could be considered to swap into my truck? Or would going custom IFS or SAS be the best route?

**ADAM**

*Via nuts@4wheeloffroad.com*

**A** Your truck is equipped with a 215mm ZF differential that is slightly larger than the 205mm that was in the 2011 and older models. Though the differential appeared under Ram 1500s starting in 2012, sometimes it takes a while for aftermarket gear and traction device manufacturers to develop products for a new axle. Developing a gear ratio isn't as simple as adding teeth to the ring gear and taking them away from the pinion; it takes a lot of R&D, testing, and refining for each and every ratio. The same thing goes for traction devices like limited slips and lockers.

We spoke to Just Differentials ([justdifferentials.com](http://justdifferentials.com)), which unfortunately had very little information about the availability or even an ETA of either aftermarket ratios or traction devices for the 215mm ZF axle. It appears that you are limited to

only available factory ratios at this time, which stop at 3.92.

Further complicating things are various reports from the field that ZF welded the ring gear to the carrier rather than using conventional ring gear bolts. Though the information we found on the subject was vague and even somewhat contradictory, it appears that possibly only 2013 models have welded differentials, so you may be in the clear. But if not, a welded ring gear means a gear swap is going to mean swapping carriers as well. There are also reports that swapping in a differential from an earlier (2011) Ram is a bolt-in, but that only nets you the ability to install up to 4.56 gears without any available traction devices. The earlier differential uses a smaller (205mm) ring-and-pinion, and you'd still have relatively weak CV axleshafts. Plus, the costs of sourcing an earlier differential and then doing a gear swap are probably prohibitive.

If you're dead set on lower gears and a front limited-slip or locker, your only options are going to require extensive custom fabrication in the form of a custom IFS system and a solid-axle swap. Neither option would be something we would recommend an average home fabricator attempt. At the end of the day you'll need to evaluate just how badly you want to upgrade your Ram and your budget, then make a decision accordingly. Or you could sit back and wait for a couple of years in the hopes that the aftermarket eventually addresses the ZF front axle.

## MINIVAN TRACTION

**Q** This may sound like a strange question, this being an off-road truck magazine, but I know gearing, lockers, and such are frequently mentioned. Do you know if anyone makes a limited-slip or locking differential for 1996-2000 Dodge Caravans with a four-speed auto trans-axle? Any input would be appreciated.

**MATTHEW**

*Via nuts@4wheeloffroad.com*

**A** No. A locker in a front-wheel drive car would be undrivable. Even if anyone offered a limited slip, the installation costs would be prohibitive. Your best bet is to sell the mom wagon and buy a truck-based SUV.

## V-8 RANGER

**Q** I own a 2015 Ford Ranger five-speed manual with a 2.5L four-cylinder gas engine. Because I live in a place full of huge sand dunes, I need more power. However, I don't know if it is possible to swap it with a 5.0L V-8 Mustang engine, an EcoBoost four-cylinder mustang engine, or any kind of engine that could give more power to my Ranger. Please note that I still want the gear to be manual.

**ABDULAZIZ**

*Via nuts@4wheeloffroad.com*

**A** A V-8 Ranger would be really cool, and one with a manual would be even cooler! Anything is possible with enough time and money, but that said, there aren't going to be any off-the-shelf options available to significantly boost the power of your truck. Plus, 2015s are still fairly new and it takes the aftermarket time to develop products to make vehicles bigger, better, faster, and louder. Unfortunately for you, the Ranger isn't even sold here in the States at the moment, so all the gearhead companies that we would normally rely upon for some insight are more or less shaking their heads.

However, all is not lost. The drag racing community is all over the Coyote 5.0L. New swap-related products are coming on the market almost daily. In fact, a story in this very issue shows one going in an early Bronco ("Coyote Meets Bronco," page 64). Beyond shoehorning the engine into the Ranger engine bay (which is going to be hard because the Coyote engine is wide) Ford Racing ([fordperformanceracingparts.com](http://fordperformanceracingparts.com)) has standalone ECU and wiring harnesses that allow you to swap a Coyote engine into just about anything your heart desires along with the six-speed manual or



## NUTS & BOLTS

automatic transmission. The Ford option allows you to keep the variable valve timing (VVT) with the engine, though there are less expensive aftermarket solutions available from companies like Holley (holley.com) and FAST (fuelairspark.com) that do not retain the VVT. Keeping a manual transmission with a transfer case will be a problem, but some combination of an F-150-sourced transmission and transfer case should be possible if you go automatic. An EcoBoost engine is also doable, but personally I wouldn't bother with the Mustang 2.3L unless packaging the Coyote in the Ranger proves impossible, and swap knowledge is more scarce than with the 5.0L.

What you propose would take a very talented shop and probably more funds than buying a new F-150 and Mustang combined, but it would be unique if it could be pulled off. What would be even better is if Ford brought the Ranger back to the U.S. with a V-8 option (hint hint). I would put this swap in the category of unobtainium, but as I said, anything is possible with the right shop and enough money.

### ANOTHER 4X2 TO 4X4

**Q** I was recently given a two-wheel-drive 1995 F-150. In speaking to numerous



people about how I wish it was four-wheel drive, some have informed that these Fords (1987-1996) are a direct bolt-on to convert to a 4x4. I am confused as to what I will need in the front end in regards to the suspension, crossmembers, and so on. I know that I will need a transmission out of four-wheel drive as well as a transfer case. I've been a subscriber for years but do not remember an article of this nature, as it did not apply to me at the time. I'm hoping I can pull one from your archives. Any help would be greatly appreciated.

**JUSTIN**

*Via nuts@4wheeloffroad.com*

**A** We get this question or ones like it a lot, and it's something we almost never recommend. Converting a truck to four-wheel drive is a lot of work. There are a many details and parts to address, and it's usually very expensive. In just about every case you are better off selling the 2WD truck and buying a 4x4. Or, if the body of the 2WD truck is pristine and you find a rusty 4x4 donor with a good frame, then even doing a body swap is easier. This scenario is really no different.

That being said, you are not misinformed, as 1980-1996 4x2 and 4x4 F-150s and Broncos are nearly identical in terms of suspension. Both use coil springs and twin-traction beams with radius arms for the front suspension, the difference being that a 2WD truck uses blank beams while a 4x4 uses a drive axle with high-pinion Dana 44 guts. The suspension mounting points are largely the same, eliminating the need for heavy fabrication.

At minimum, you are going to need the complete hub-to-hub front axle assembly from a similar-year 4x4, along with the front springs, shocks, radius arms, brake lines, steering linkage, and front driveshaft. You'll also need to source a transfer case and decide whether it's better to use a donor 4x4 transmission or convert your truck's existing transmission to accept the transfer case. If you go the latter route, you'll need a 4x4 tailshaft and an adapter that matches your existing transmission along with a transmission shop to install the parts. You'll also need the shift linkage or the wiring and dash bezel to control the transfer case, along with lots of other small parts. Because of all the parts needed, you are usually better off purchasing a complete wrecked donor (one that has been hit in the rear) rather than trying to source everything from a junkyard because you will inevitably miss something you need.

Once you have all the parts on hand, the swap is mostly bolt-on. But then you have a twin-traction beam 4x4 truck, which has a mixed reputation. A lot of people would

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argue (correctly) that a solid-axle swap would be more worth the effort, although an SAS requires quite a bit more fabrication and a donor front axle, which is getting hard to find. This should give you a better idea of what's needed, but ultimately you'll need to decide just how badly you want your free truck to be a 4x4.

## LED HEADLIGHTS IN SNOW

**Q** My girlfriend wanted better lighting for her 2012 JK, so she installed the Trucklite LED headlights (yes, she installed them, couldn't wait for me to get off work). They are great. Good pattern and tons of light output. However, snow accumulates on them in a snowstorm and causes them to be much less effective. At that point, the crappy little factory foglights (halogens) throw out more light. I guess that the low power draw of LEDs is a very attractive feature, but the lack of heat to melt off snow is an issue, especially on the lonely Nevada highways. Is there a solution to this? I see that tons of new vehicles come with LED headlights. Have they solved the issue?

**RANDY**

*Via nuts@4wheeloffroad.com*

**A** LED headlights are a popular upgrade for JKs, but after doing a little research it appears that snow accumulation is a common problem for all aftermarket LED headlight manufacturers and is not specific to Truck-Lite. It seems that the company is also aware of the issue because it has released a heated LED headlight kit, which is available from places like Quadratic (quadratic.com). The newer version of the headlights include a heated lens that automatically activates under 50 degrees Fahrenheit. Unfortunately, this doesn't help your girlfriend's situation, as these heated lenses can't be retrofitted onto unheated lights.

Beyond swapping to the heated LED lights, there isn't a whole lot you can do. Making sure the headlights are wiped clean of snow and ice is always a good practice,

and on longer trips, periodically stopping to wipe them off is also a good idea. As for OEM LED lights, it appears that manufacturers take a few different approaches, from heated lenses to redirecting the heat that normally dissipates out of the back of the lights via a heat sink.

Keep in mind that certain conditions will cause snow and ice to accumulate on pretty much any type of headlight, even traditional incandescent bulbs. LED lights are just more susceptible to it because they run cooler than conventional bulbs. ❄️

## SUBMISSION INFORMATION

Confused? Email your questions to the address below with "Nuts, I'm confused" as the subject. Include a picture, if applicable, no smaller than 1600 x 1200 pixels (or two megapixels) as a TIFF, EPS, or maximum-quality JPEG. We also read the forums on (4wheeloffroad.com).

**WRITE TO:** Nuts & Bolts, 4-Wheel & Off-Road, 831 S. Douglas St., El Segundo, CA 90245 **FAX TO:** 818.566.8501 **EMAIL TO:** nuts@4wheeloffroad.com



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## WET YJ

This is my 1989 YJ with a full Chevy drivetrain sitting on 40-inch Super Swampers. We were wheeling at Rausch Creek. This my second failed attempt at this spot. Winch was broken, but luckily some fellow wheelers lent a hand. I'm still listening to my girlfriend complain about her wet feet.

**ERIC MANTZ**

Bethlehem, PA 🇺🇸



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